# Texas Vegetation Classification Project: Interpretive Booklet for Phase 3

Texas Parks and Wildlife Department and Texas Natural Resources Information System

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## Introduction

The Texas Parks and Wildlife Department is mapping the existing vegetation of Texas at fine spatial and thematic resolution (more mapped vegetation types) over the course of six years (Figure 1). Phases 1 and 2 of the project, covering central and east Texas, are complete. The following document accompanies Phase 3, most of the Texas coast, south to the Rio Grande Valley, including the eastern South Texas Plains.

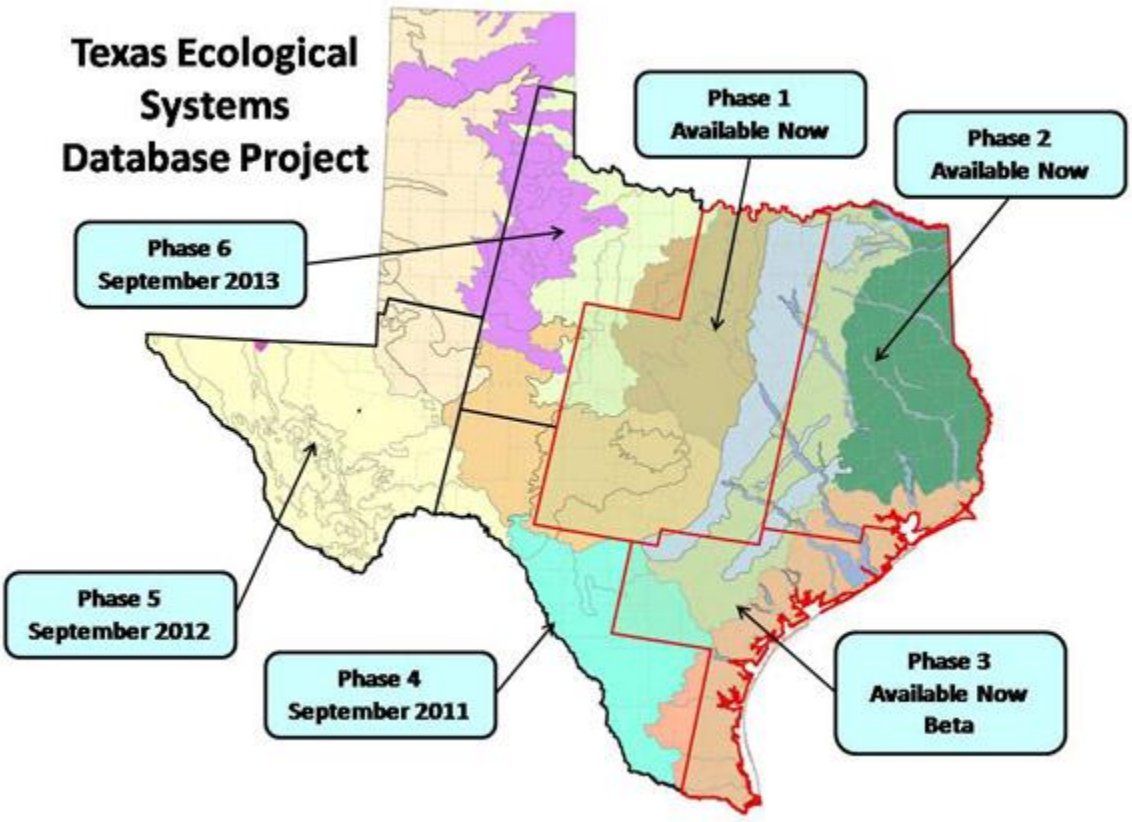



Figure 1. Texas Vegetation Classifaction Project Schedule

The general procedure used to classify and map existing vegetation includes (1) mapping land cover from 30 m resolution satellite imagery, (2) developing image objects from air photos to improve spatial resolution to 10 m, and (3) modeling existing vegetation using information developed from digital county soil surveys and variables developed from digital elevation models. Detailed overall methods are contained in the Phase 1 interpretative booklet, available on the Texas Parks and Wildlife public web site.

Climatic variables, and therefore woody species life forms (e.g. needle-leaf evergreen, cold deciduous, drought deciduous, broad-leaf evergreen) are more varied and occur together more often on the landscape in Phase 3 versus Phase 1 and Phase 2. This results in some issues in distinguishing among land cover types, such as broadleaf evergreen woodland and forest, needle-leaf evergreen shrubland, and deciduous shrubland: each of these types tend to circumscribe a good deal of variation. In turn, ecoregions are diverse in Phase 3, and include habitats within the Edwards Plateau, Blackland Prairie, Post Oak Savanna, Gulf Coast Prairie, Coastal Bend, South Texas Plains, Coastal Sand Plain, near-coast, and subtropical Rio Grande Valley. Thus, we used a fairly broad suite of modeling rules to identify mapped vegetation types for Phase 3.

Soil map units and ecological site types were used as primary modeling tools as in Phase 1 and Phase 2. Grouping of map units into similar habitat types for modeling was base based both on ecological site type designations, and on modifications based on viewing the distribution of individual map units.

Differences among floodplain types (e.g. Central Texas, Coastal Bend, Edwards Plateau, and South Texas), which were mapped only on floodplain soil map units, are based on prevailing dominance patterns and circumscribe watersheds defined by drainage divides. Streams from the 100,000 scale National Hydrologic Database were buffered by 30 meters to identify companion riparian types. For example, Coastal Bend Riparian types are within the same drainages as Coastal Bend Floodplain types. Ramadero types are buffered streams within the same watershed as South Texas Floodplain types. Additional modeling rules applied include:

1. Species range maps were used to help map types with post oak and eastern redcedar to the north and east, where these species are replaced generally by South Texas Plains types to the west and south.

2. Slope types were mapped on slopes >20% in the Edwards Plateau and Post Oak Savanna.

3. Live oak shrublands were mapped only within 100 m of live oak woodland; evergreen shrublands from the land cover elsewhere were mapped as other dense or evergreen shrubland types.

4. Rio Grande Delta types and the South Texas: Palm Grove type were mapped only on public lands and primarily on bottomland soils, where remnant vegetation has been conserved or is being actively restored.

5. Elevation <1.5 m was used to model the Coastal: Sea Ox-eye Daisy and South Texas: Wind Tidal flats types.

6. Algal flats were identified directly from Remote Sensing by re-classification of areas where these occur.

Mistakes in mapped vegetation resulting from inconsistent mapping of soils have been discussed for Phase 1 and 2, and also occur in Phase 3. In the South Texas Plains, differences in vegetation resulting from soil variability including salinity, calcareous substrates, and the presence of caliche are apparent on the ground, but these soil types are not always accurately mapped, or consistently mapped from county to county.

We have mapped differences in shrublands for the portion of Phase 3 within the South Texas Plains based on soil variation with the following ideas in mind: (1) sandier or looser soils tend to be more open and have less shrub diversity, (2) clayey soils tend to support more dense, more diverse shrublands, (3) caliche soils tend to occur in areas of higher topographic relief, are diverse, and tend to contain some less commonly encountered species such as cenizo and guajillo, and (4) deep sands are unique in terms of their grassland, shrubland, and woodland composition (Figure 2). Shrublands of all densities are found on sandy, clayey, and caliche soils due to modern management regimes such as brush clearing, seeding of non-native grasses, and grazing management. Managed rangeland across large upland areas over all soil types are dominated by mesquite, sometimes with an understory of non-native grasses like buffelgrass and a few additional shrub species, and with pricklypear a conspicuous component. Likewise, tame pastures may occur on most soils, and may be relatively open or relatively shrubby. Thus, many of the shrubland types mapped may be more or less similar, and each circumscribes a good deal of variation. Deep sand types, however, are quite distinct in supporting live oak woodland and shrubland, low shrub diversity, and high grassland diversity.

Shrublands to the north in Phase 3 through the Coastal Bend to the Columbia Bottomlands are broadly circumscribed. A variety of mainly disturbance species may be common in the same landscape, and these may be entirely evergreen (e.g. yaupon, eastern redcedar) or essentially evergreen in warm years (e.g. huisache, Macartney rose).

Based on 1,239 field-collected data points where workers were highly or very highly confident in the classification of existing vegetation, the mapped vegetation types are 72% accurate in terms of land cover, and 68% accurate at the ecological system level of resolution (see accompanying appendix for conceptual descriptions). The accuracy was 60% at the finest level of resolution (mapped vegetation type). However, the field-collected points did not include many samples of easy to classify types such as water and urban, which would tend to increase the overall map accuracy. The map accuracy is slightly lower for this phase of the project versus Phase 1 and Phase 2, due to wide

variation in land cover types, including issues in terms of recognizing and indeed in defining deciduous versus evergreen shrubland within a subtropical landscape.

## Mapped Vegetation Type Descriptions and Ecological Interpretations

The brief descriptions of existing vegetation types that follow help the user understand the type and amount of variation that might be circumscribed within a given mapped type. We sometimes refer to methods used in modeling and mapping in order to help the user better understand the concepts used to define a type. Photographs have been taken at every ground verification point for all phases, and we selected from those to provide the illustrations. Even though we collected more than 2,180 ground verification points, some of the less common mapped vegetation types were not sampled, and their general character was inferred from field experience. Modeling and mapping results flow from the line of thought that asserts different types of plant communities prevail on different landforms and soils.

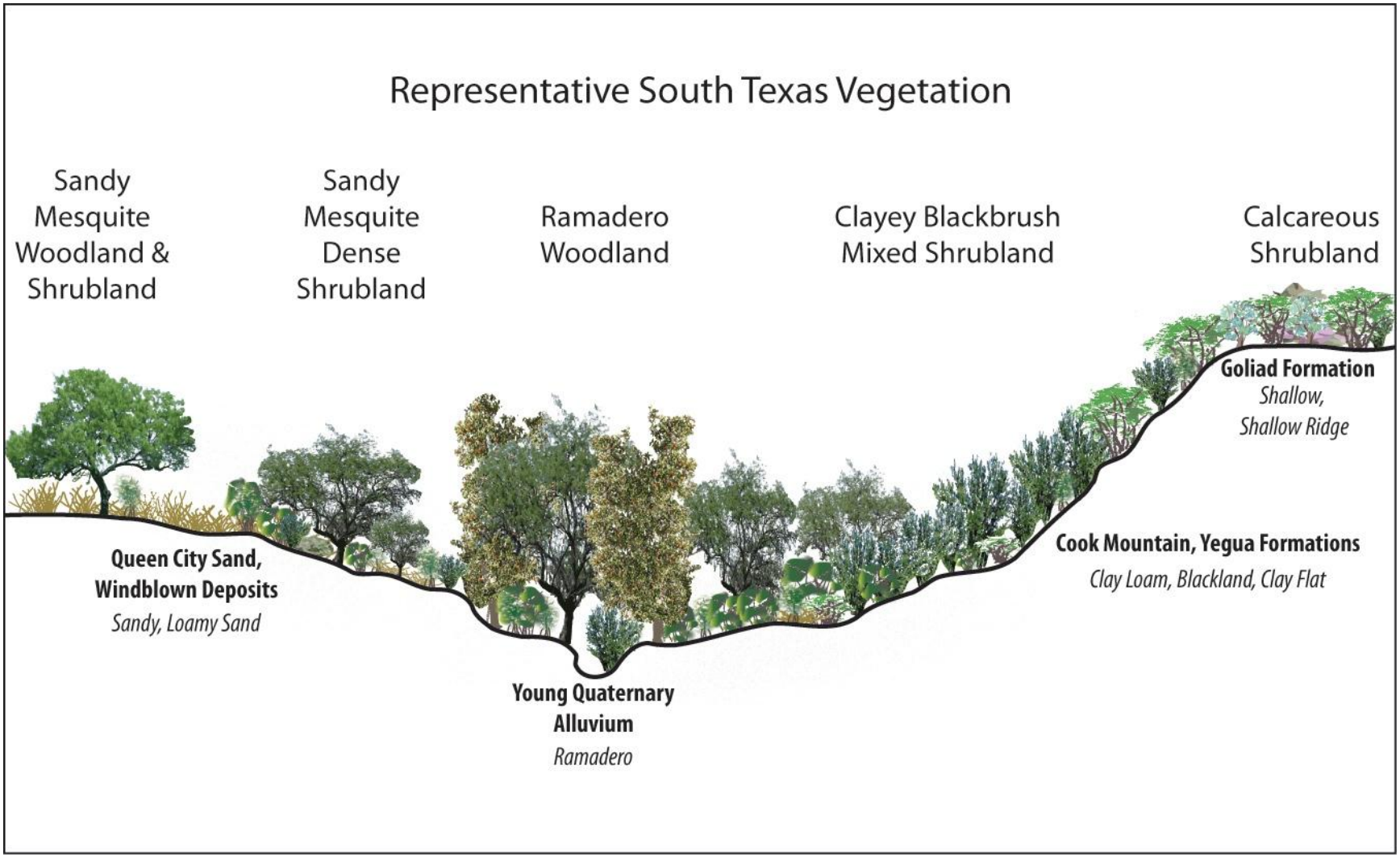



Figure 2. Profile of representative mapped vegetation in South Texas. Mapped South Texas vegetation types are indicated by the labels above the depicted vegetation. Representative geologic strata associated with the types are indicated in bold below the profile, and representative Ecological Sites (soil ecoclasses) are indicated in italics.

**Active Sand Dune**

Area in Phase 3: 7,829 acres (3,168 ha)

Description of Mapped Type: This mapped type consists of essentially barren, active sand dunes that are mapped on the Coastal Sand Plain, barrier islands, and adjacent lower Gulf Coast of Texas.

Where to Visit:

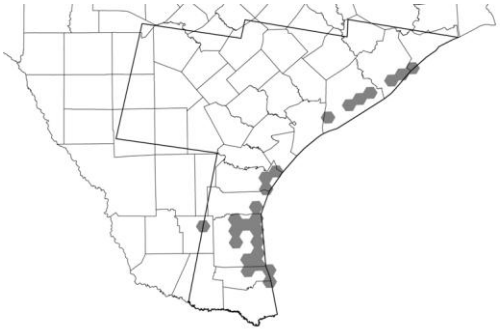
Laguna Atascosa National Wildlife Refuge - South Padre Island

Lower Rio Grande Valley National Wildlife Refuge

Mad Island Wildlife Management Area-Matagorda Peninsula

Padre Balli Park

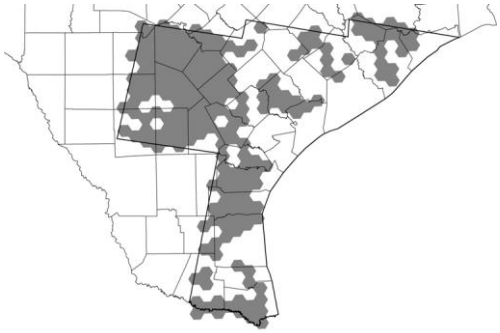
Padre Island National Seashore



**Barren**

Area in Phase 3: 116,898 acres (47,307 ha)

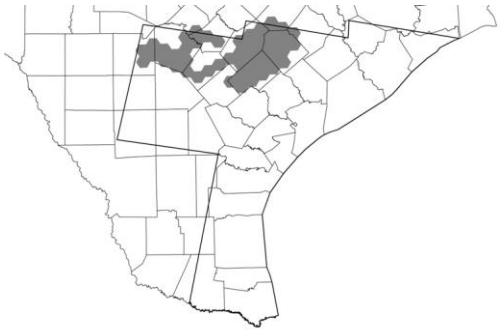
Description of Mapped Type: This type includes areas where little or no vegetation cover existed at the time of image data collection. In Phase 3, this includes fallow fields or areas within cropland blocks that remained barren throughout one growing season, heavily grazed pastures where bare soil was dominant, and areas of exposed rock and bare soil on outcrops, along rivers, or associated with development.



**Blackland Prairie: Disturbance or Tame Grassland**

Area in Phase 3: 529,734 acres (214,376 ha)

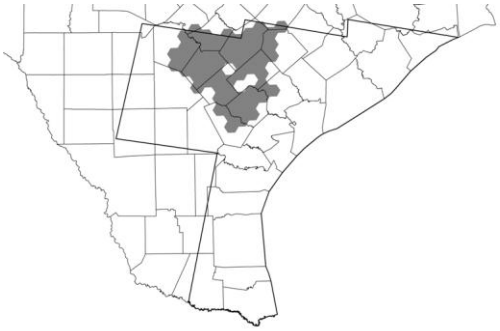
Description of Mapped Type: This type includes grasslands in many conditions, and introduced grasses such as Bermudagrass, King Ranch bluestem, and kleingrass are the most frequent dominant species. Shrubs or tress such as mesquite, live oak, huisache, and pricklypear may be present. Important native grasses may include little bluestem, silver bluestem, sideoats grama, and threeawn species.



**Central Texas: Floodplain Deciduous Shrubland**

Area in Phase 3: 31,506 acres (12,750 ha)

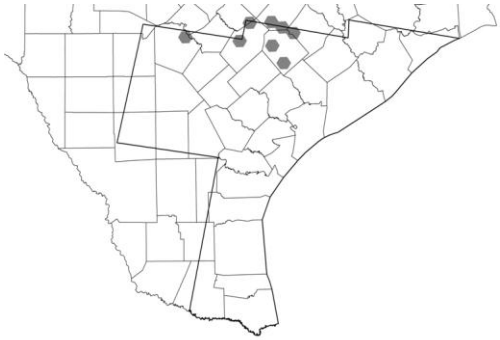
Description of Mapped Type: This type may range from relatively dry to wet but in Phase 3 is generally dominated by early successional shrubs and young trees such as sugar hackberry, cedar elm, huisache, Chinese tallow, and mesquite, In wetter areas buttonbush or black willow may be dominant.



**Central Texas: Floodplain Evergreen Forest**

Area in Phase 3: 28 acres (11 ha)

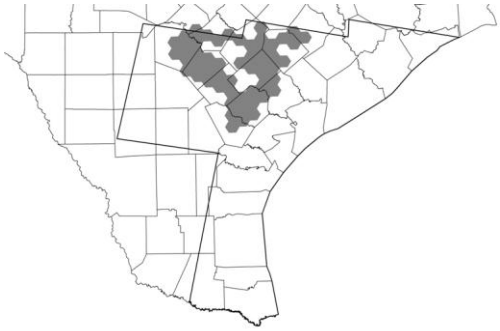
Description of Mapped Type: In Phase 3, only small areas are mapped as this type, and most are successional eastern redcedar forests or redcedar associated with steep river bluffs.



**Central Texas: Floodplain Evergreen Shrubland**

Area in Phase 3: 2,411 acres (976 ha)

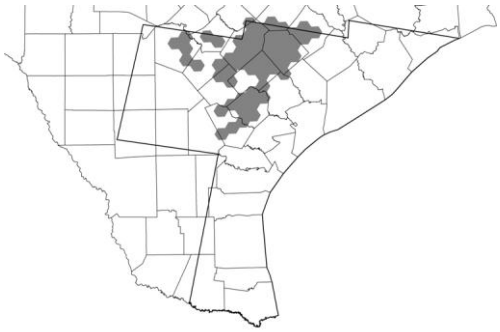
Description of Mapped Type: A variety of successional, mainly evergreen shrubs may be present in this uncommon type, including eastern redcedar in the north and west, and huisache, yaupon, or Macartney rose, mainly in the central and south. Mesquite, live oak, sugar hackberry, and cedar elm may be components.



**Central Texas: Floodplain Hardwood / Evergreen Forest**

Area in Phase 3: 9,300 acres (3,764 ha)

Description of Mapped Type: Live oak together with deciduous trees such as sugar hackberry, cedar elm, and black willow are common components of this type, which may occur on or relatively wet or dry sites. Brasil, black willow, Texas persimmon, and colima are common understory species.

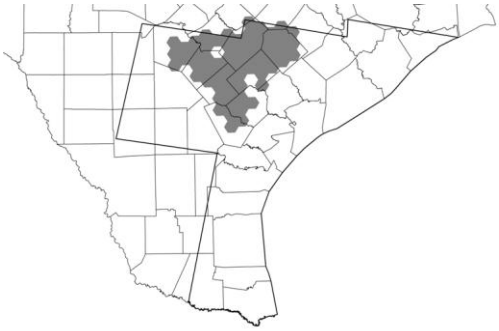


**Central Texas: Floodplain Hardwood Forest**

Area in Phase 3: 135,855 acres (54,978 ha)

Description of Mapped Type: Deciduous trees such as black willow, cedar elm, sugar hackberry, pecan, and green ash are common dominants of this type, and live oak is often important.

Where to Visit:



Calaveras Park

Goliad State Park

McAllister Park

Mitchell Lake Audubon Sanctuary

Nolte Island Recreation Area

Olmos Basin Park

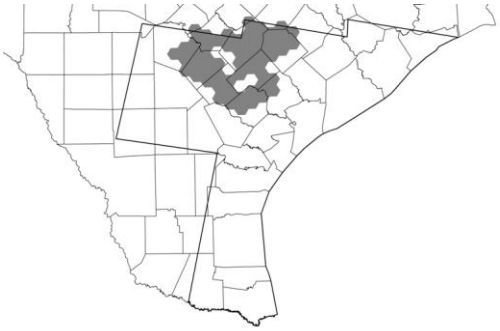
San Antonio Missions National Historic Park

Southside Lions Park East

**Central Texas: Floodplain Herbaceous Vegetation**

Area in Phase 3: 144,630 acres (58,530 ha)

Description of Mapped Type: This type usually represents tame pasture or successional grasslands. Non-native grasses such as Bermudagrass, and Johnsongrass are often dominant, and shrubs such as mesquite and huisache are often present.



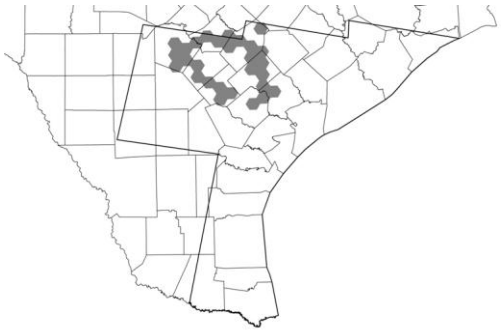
**Central Texas: Floodplain Herbaceous Wetland**

Area in Phase 3: 3,992 acres (1,616 ha)

Description of Mapped Type: A variety of herbaceous sedges, rushes, spikerushes, bulrushes, smartweeds, and grasses, together with shrubs such as mesquite, huisache, buttonbush, and black willow, may be common in this mapped type.

Where to Visit:

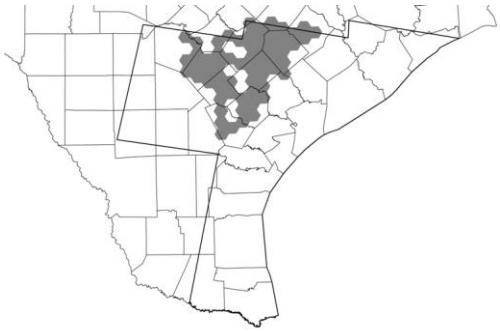
Mitchell Lake Audubon Sanctuary



**Central Texas: Floodplain Live Oak Forest**

Area in Phase 3: 16,878 acres (6,830 ha)

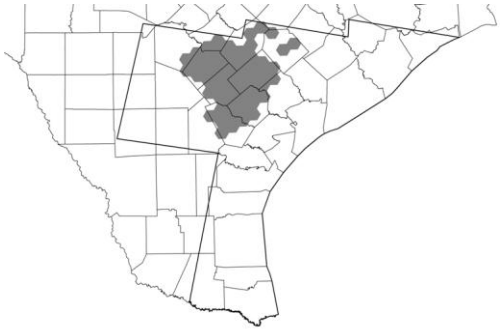
Description of Mapped Type: This forest contains live oak in the canopy. Deciduous species such as cedar elm, sugar hackberry, water oak, pecan, and American elm are common components.



**Central Texas: Riparian Deciduous Shrubland**

Area in Phase 3: 12,613 acres (5,104 ha)

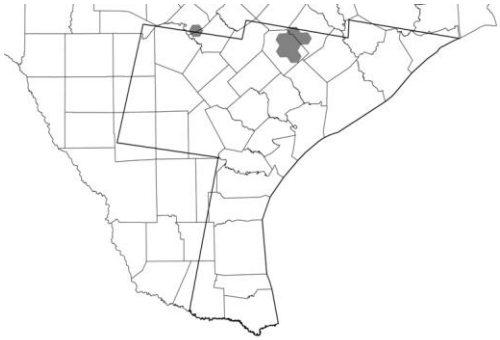
Description of Mapped Type: Various mainly successional deciduous shrubs and small trees such as mesquite, huisache, Chinese tallow, sugar hackberry, and cedar elm may be important in this type. In wetter areas, black willow or common buttonbush may be important.



**Central Texas: Riparian Evergreen Forest**

Area in Phase 3: 79 acres (32 ha)

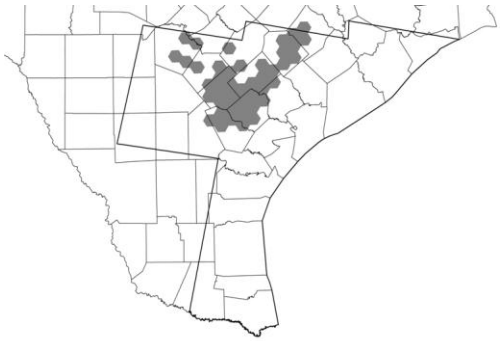
Description of Mapped Type: This uncommon type may be dominated by eastern redcedar in the north and west and by loblolly pine in the east, and live oak may be a component.



**Central Texas: Riparian Evergreen Shrubland**

Area in Phase 1: 1,028 acres (416 ha)

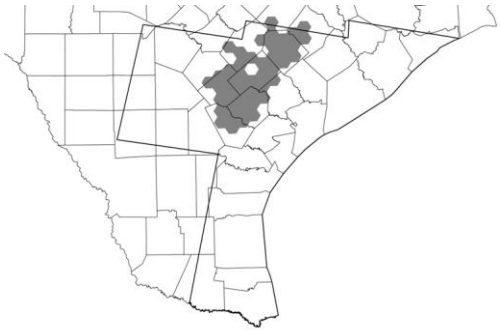
Description of Mapped Type: A variety of successional, mainly evergreen shrubs may be present in this uncommon type, including eastern redcedar in the north and west, and huisache, yaupon, or Macartney rose in the central and south. Mesquite, live oak, sugar hackberry, Texas persimmon, colima, Brasil, and cedar elm may be present.



**Central Texas: Riparian Hardwood / Evergreen Forest**

Area in Phase 3: 4,281 acres (1,733 ha)

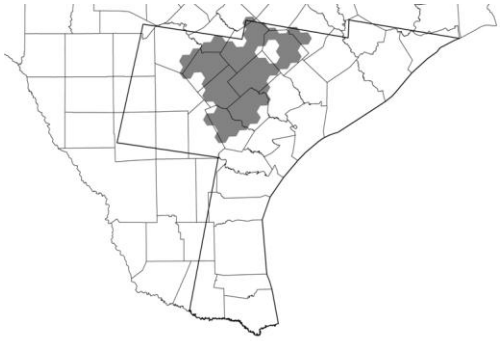
Description of Mapped Type: Live oak together with deciduous trees such as sugar hackberry, cedar elm, and black willow are common components of this mapped type. Brasil, Texas persimmon, and colima are common understory species.



**Central Texas: Riparian Hardwood Forest**

Area in Phase 3: 23,073 acres (9,338 ha)

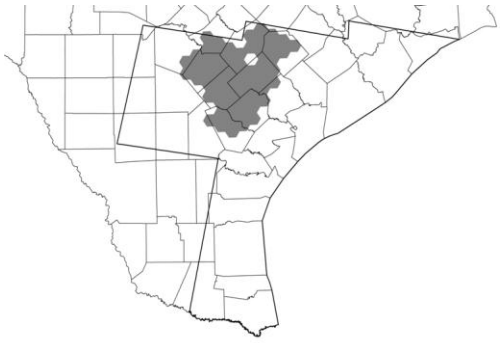
Description of Mapped Type: Deciduous trees such as sugar hackberry, cedar elm, and black willow, are common overstory components of this type. Live oak is often an important component as well, and successional shrubs or small trees such as mesquite, huisache, and Chinese tallow are often present.



**Central Texas: Riparian Herbaceous Vegetation**

Area in Phase 3: 28,721 acres (11,623 ha)

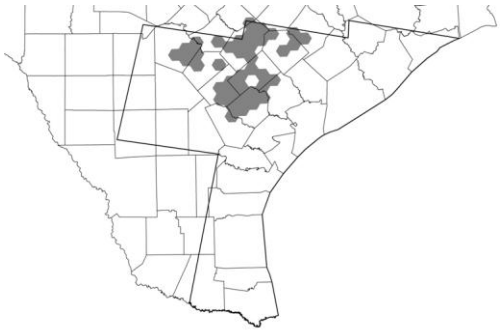
Description of Mapped Type: This type usually is dominated by successional grasses and forbs such as King Ranch bluestem, doveweed, western ragweed, and Bermudagrass. Small trees and shrubs such as live oak, mesquite, huisache, yaupon, brasil, and eastern redcedar may be present.



**Central Texas: Riparian Herbaceous Wetland**

Area in Phase 3: 235 acres (95 ha)

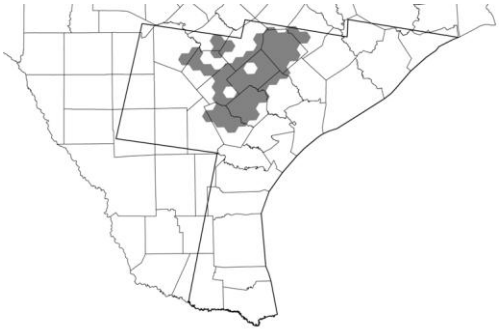
Description of Mapped Type: A variety of herbaceous sedges, rushes, spikerushes, bulrushes, smartweeds, and grasses, together with shrubs such as buttonbush and black willow, may be present in this mapped type.



**Central Texas: Riparian Live Oak Forest**

Area in Phase 3: 10,231 acres (4,140 ha)

Description of Mapped Type: This forest contains live oak in the canopy. Deciduous species such as cedar elm, sugar hackberry, water oak, pecan, and American elm are common components.



**Chenier Plain: Live Oak Fringe Forest**

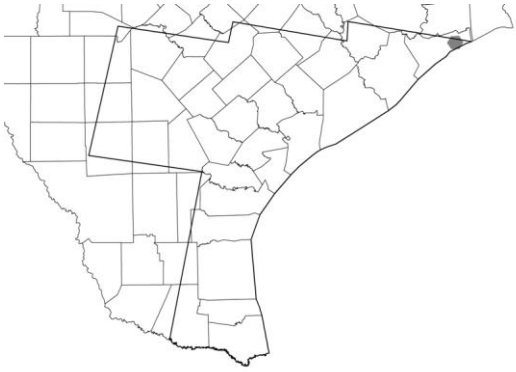
Area in Phase 3: 33 acres (13 ha)

Description of Mapped Type: Nearly pure stands of coastal live may occur within this mapped type, and species such as sugar hackberry, western soapberry, Carolina laurelcherry, and Hercules-club pricklyash may be present. Loblolly pine may also be a component.

**Chenier Plain: Mixed Live Oak / Deciduous Hardwood Fringe Forest**

Area in Phase 3: 4 acres (2 ha)

Description of Mapped Type: This mapped type generally occurs over wet soils and may include coastal live oak or loblolly pine mixed with deciduous species, or in some places southern magnolia. Deciduous trees may include laurel oak, water oak, willow oak, cherrybark oak, sweetgum, Hercules-club pricklyash, Chinese tallow, and post oak.



**Chenier Plain: Salt and Brackish High Tidal Marsh**

Area in Phase 3: 2,619 acres (1,060 ha)

Description of Mapped Type: This mapped type includes a variety of tidal-influenced marsh types that may vary from year to year based primarily on storm events and precipitation, and across small areas due to small variations in elevation. Important species may include marshhay cordgrass, saltgrass, three-square bulrush, and seashore paspalum.

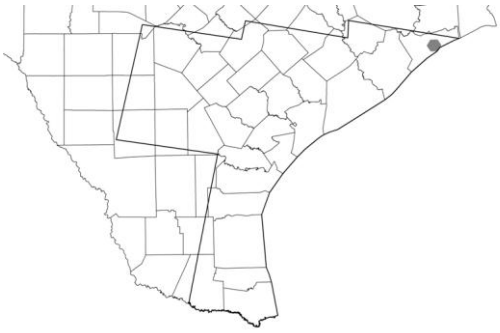
**Chenier Plain: Salt and Brackish High Tidal Shrub Wetland**

Area in Phase 3: 896 acre (363 ha)

Description of Mapped Type: This type is mapped in limited areas and may include species such as baccharis or shrubby sumpweed as important species together with herbaceous species such as marshhay cordgrass.

Where to Visit:

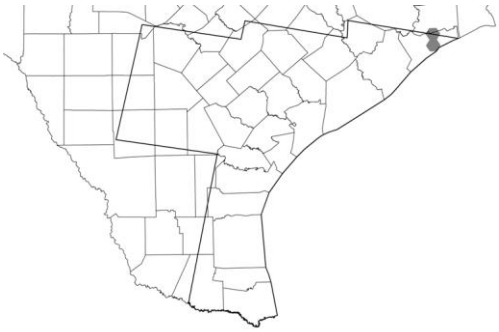
Fort Travis Seashore Park



**Chenier Plain: Salt and Brackish Low Tidal Marsh**

Area in Phase 3: 4,788 acres (1,938 ha)

Description of Mapped Type: This mapped type includes a variety of tidal-influenced marsh types that may vary from year to year based primarily on storm events and precipitation, and across small areas due to small variations in elevation. Smooth cordgrass is a common species, along with other salt-tolerant species such as three-square bulrush, marshhay cordgrass, seashore paspalum, saltgrass, and blackrush.

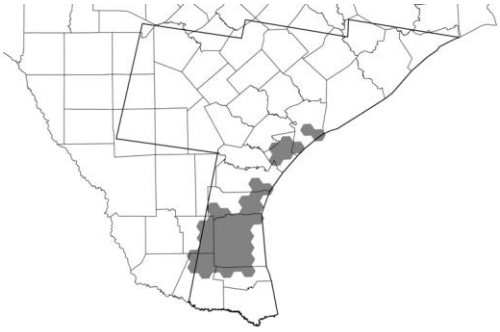


**Coastal and Sandsheet: Deep Sand Grassland**

Area in Phase 3: 779,165 acres (315,317 ha)

Description of Mapped Type: Seacoast bluestem. rat-tail smutgrass, threeawns, and gulfdune paspalum are often important in this mapped type, especially coastward, and tanglehead grass dominates some more inland areas. Slightly lower areas may be dominated by marshhay cordgrass or gulf cordgrass, and coastal dunes may contain sea oats, bitter panicum, or goat-foot morningglory as important components. Sparse tree and shrub cover may include live oak, mesquite, granjeno, and Lindheimer pricklypear.

Where to Visit:



Aransas National Wildlife Refuge

Boca Chica State Park

Galveston Island State Park

Laguna Atascosa National Wildlife Refuge

Mad Island Wildlife Management Area

Matagorda Bay Nature Park

Mustang Island State Park

Padre Balli Park

Padre Island National Seashore

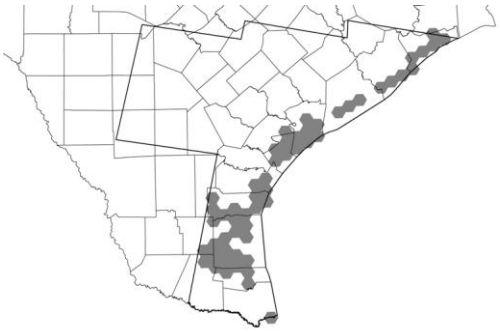
San Bernard National Wildlife Refuge

**Coastal and Sandsheet: Deep Sand Grassland Swale Marsh**

Area in Phase 3: 16,244 acres (6,574 ha)

Description of Mapped Type: Alternately wet and dry depressions typical of this type vary from year to year, and may be more or less salty. They may contain marshhay cordgrass, saltgrass, southern cattail, common frog-fruit, pennywort, saltwort, American bulrush, and other wetland species. Shrubs such as Baccharis species, mesquite, American beautyberry, and sesbania species may also be present.

Where to Visit:



Aransas National Wildlife Refuge

Aransas National Wildlife Refuge-Matagorda

Boca Chica State Park

Galveston Island State Park

Laguna Atascosa National Wildlife Refuge

Mad Island Wildlife Management Area

Mustang Island State Park

Old Fort San Jacinto

Padre Island National Seashore

San Bernard National Wildlife Refuge

**Coastal and Sandsheet: Deep Sand Live Oak Forest and Woodland**

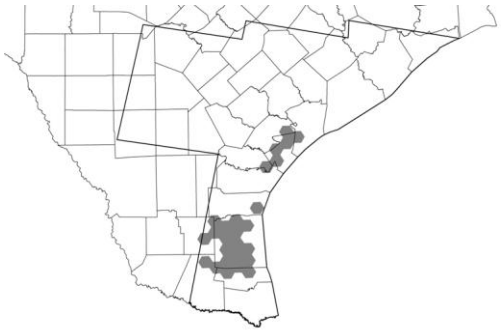
Area in Phase 3: 185,838 acres (75,206 ha)

Description of Mapped Type: Dense, low stands of live oak characterize this mapped type. Interior of larger mottes are usually low in species diversity, but American beautyberry, granjeno, redbay, yaupon, colima, and wax-myrtle may be present in the understory or around motte edges.

Where to Visit:

Aransas National Wildlife Refuge

Goose Island State Park



**Coastal and Sandsheet: Deep Sand Live Oak Shrubland**

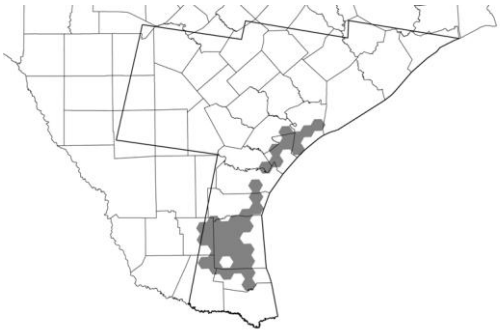
Area in Phase 3: 78,391 acres (31,724 ha)

Description of Mapped Type: Smaller mottes of low live oak interspersed with grassy openings characterize this type. Wax-myrtle, yaupon, redbay, and Baccharis species are common shrubs. Gulfdune paspalum, seacoast bluestem, Gulf cordgrass, yankeeweed, and betonyleaf thoroughwort are common herbaceous species.

Where to Visit:

Aransas National Wildlife Refuge

Goose Island State Park



**Coastal and Sandsheet: Deep Sand Live Oak Swale Marsh**

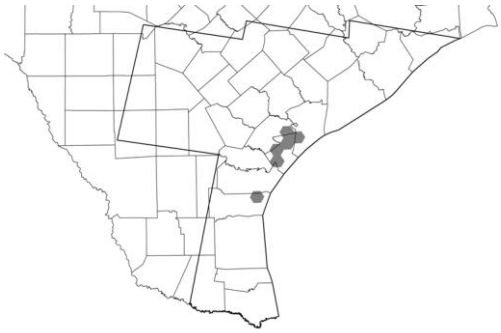
Area in Phase 3: 4,049 acres (1,639 ha)

Description of Mapped Type: This type occurs as depressions in hummocky landscapes where higher land positions are dominated by live oak woodlands or shrublands. Alternately wet and dry depressions typical of this type vary from year to year, and may be more or less salty. They may contain marshhay cordgrass, saltgrass, southern cattail, common frog-fruit, pennywort, saltwort, American bulrush, and other wetland species. Shrubs such as Baccharis species, mesquite, American beautyberry, and sesbania species may also be present.

Where to Visit:

Aransas National Wildlife Refuge

Goose Island State Park



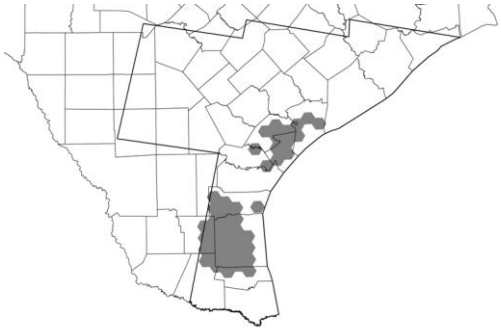
**Coastal and Sandsheet: Deep Sand Live Oak / Mesquite Woodland**

Area in Phase 3: 1,899 acres (769 ha)

Description of Mapped Type: This uncommon and diverse type usually contains live oak or mesquite as important species together with a variety of shrubs and trees such as sugar hackberry, cedar elm, yaupon, wax-myrtle, huisache, colima (south), and American beautyberry.

Where to Visit:

Aransas National Wildlife Refuge



**Coastal and Sandsheet: Deep Sand Shrubland**

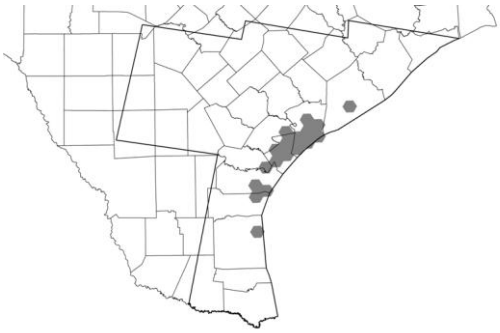
Area in Phase 3: 7,893 acres (3,194 ha)

Description of Mapped Type: This uncommon type is often mapped on barrier islands and near the coast where Baccharis species, sumpweed, and mesquite may be important, and may be interspersed with gulf cordgrass and marshhay cordgrass.

Where to Visit:

Aransas National Wildlife Refuge

Padre Island National Seashore



**Coastal: Beach**

Area in Phase 3: 12,400 acres (5,018 ha)

Description of Mapped Type: This mapped type is unvegetated or very sparsely vegetated and species such as goat-foot morningglory, bitter panicum, gulf searocket, and largeleaf pennywort may be present.

Where to Visit:

Boca Chica State Park

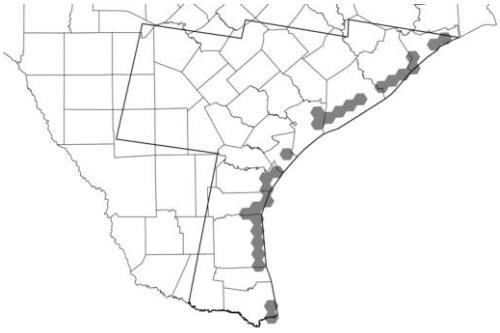
Galveston Island State Park

Laguna Atascosa National Wildlife Refuge

Matagorda Bay Nature Park

Mustang Island State Park

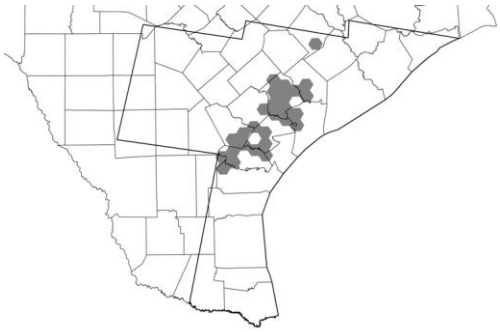
San Bernard National Wildlife Refuge



**Coastal Bend: Floodplain Deciduous Shrubland**

Area in Phase 3: 12,011 acres (4,861 ha)

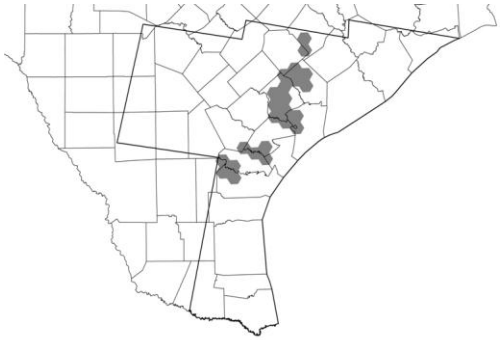
Description of Mapped Type: . Successional shrublands and sparse, low woodlands with species such as mesquite, huisache, sugar hackberry, and cedar elm are common within this type.



**Coastal Bend: Floodplain Evergreen Shrubland**

Area in Phase 3: 9,939 acres (4,022 ha)

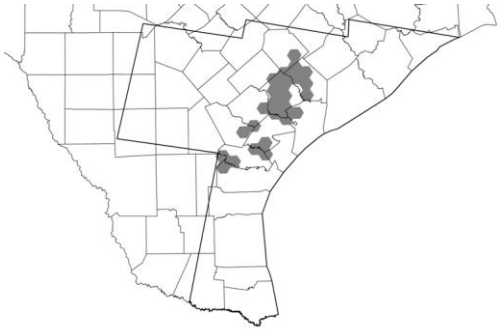
Description of Mapped Type: Relatively dense disturbance shrublands or low woodlands with species such as colima, dwarf palmetto (north), Macartney rose, huisache, granjeno, sugar hackberry, lotebush, and mesquite are characteristic of this type. Live oak may also be a component or may form a sparse overstory in some areas.



**Coastal Bend: Floodplain Grassland**

Area in Phase 3: 46,414 acres (18,783 ha)

Description of Mapped Type: .Grazed pastures with grasses such as Bermudagrass, King Ranch bluestem, kleingrass, Johnsongrass, bristlegrass species, and rosette grasses characterize this type. Herbaceous species such as silverleaf sunflower, dayflower, and smallflower groudcherry may be components, and trees such as pecan, live oak, and sugar hackberry may form a sparse canopy.



**Coastal Bend: Floodplain Hardwood Forest**

Area in Phase 3: 91,434 acres (37,002 ha)

Description of Mapped Type: This type may be relatively wet or dry, and species such as cedar elm, sugar hackberry, pecan, green ash, black willow, live oak, American elm, and bur oak may be among the dominants. To the south, anacua and Mexican ash are common in the overstory. Possumhaw, swamp privet, colima (southwest), Chinese tallow (northeast) and dwarf palmetto (wetter sites) may be present in the understory.

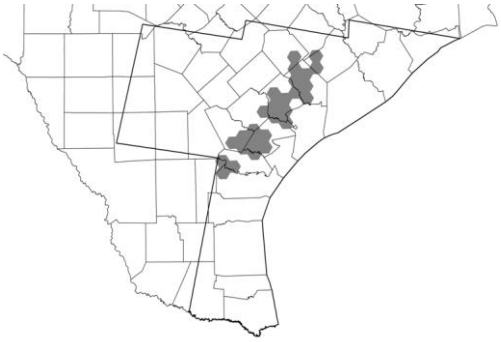
Where to Visit:

Aransas National Wildlife Refuge

Guadalupe Delta Wildlife Management Area

Lake Texana

Welder Wildlife Refuge

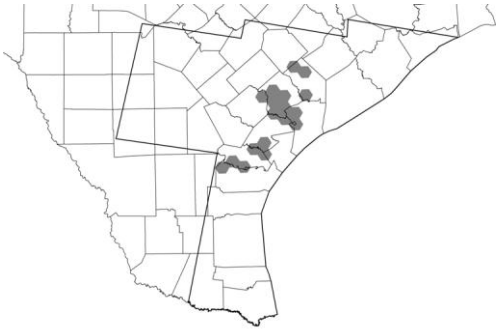


**Coastal Bend: Floodplain Herbaceous Wetland**

Area in Phase 3: 13,821 acres (5,593 ha)

Description of Mapped Type: A variety of herbaceous sedges, rushes, spikerushes, bulrushes, smartweeds, and grasses, together with shrubs such as buttonbush and black willow may be important in this mapped type.

Where to Visit:



Guadalupe Delta Wildlife Management Area

Lake Texana

Mad Island Wildlife Management Area

Welder Wildlife Refuge

**Coastal Bend: Floodplain Live Oak / Hardwood Forest**

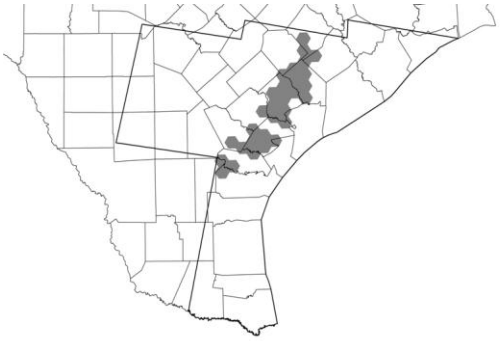
Area in Phase 3: 12,632 acres (5,112 ha)

Description of Mapped Type: Live oak together with deciduous trees such as cedar elm, sugar hackberry, anacua (southwest), Chinese tallow (northeast), and black willow may be important in this type, which may be more or less frequently flooded. Mesquite, huisache, colima (southwest), and possumhaw may occur as shrubs or small trees in openings, and dwarf palmetto may occur on wetter sites.

Where to Visit:

Lake Texana

Welder Wildlife Refuge



**Coastal Bend: Floodplain Live Oak Forest**

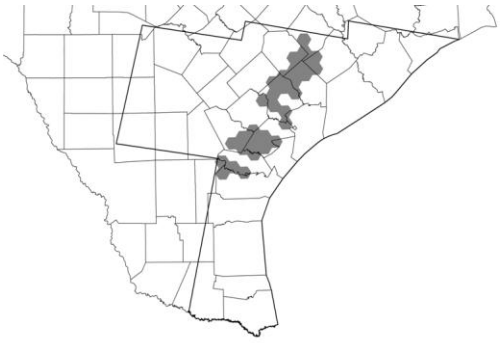
Area in Phase 3: 18,765 acres (7,594 ha)

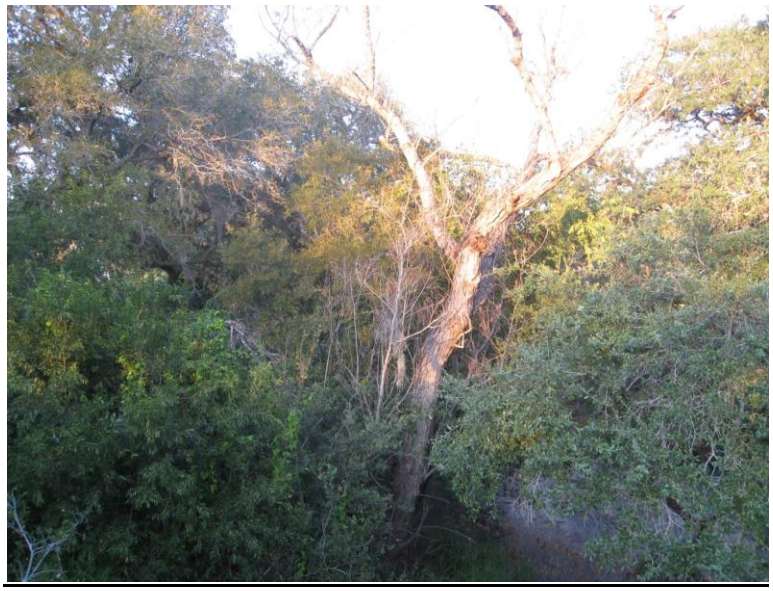
Description of Mapped Type: Live oak may occur in nearly pure stands or may be mixed with species such as cedar elm, sugar hackberry, anacua (southwest), and black willow.

Where to Visit:

Lake Texana

Welder Wildlife Refuge





**Coastal Bend: Riparian Deciduous Shrubland**

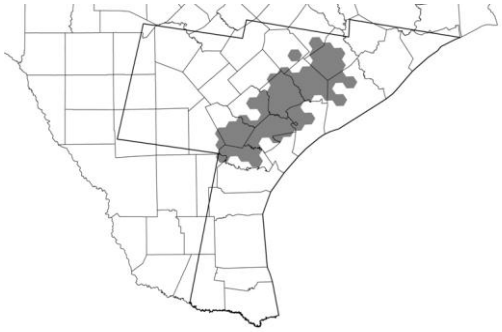
Area in Phase 3: 4,165 acres (1,685 ha)

Description of Mapped Type: Successional shrublands and sparse, low woodlands with species such as mesquite, huisache, sugar hackberry, and cedar elm are common within this type.

Where to Visit:

Lake Texana

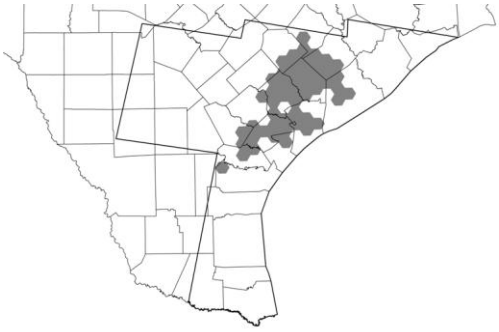
Welder Wildlife Refuge



**Coastal Bend: Riparian Evergreen Shrubland**

Area in Phase 3: 1,377 acres (557 ha)

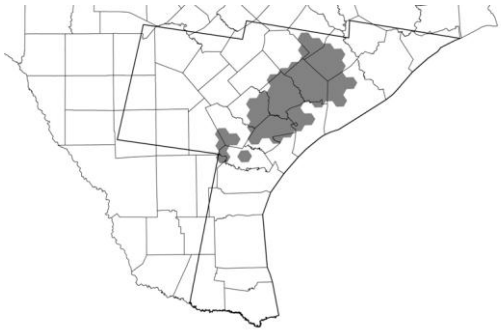
Description of Mapped Type: Relatively dense disturbance shrublands or low woodlands with species such as colima, Macartney rose, huisache, granjeno, sugar hackberry, and mesquite are characteristic of this type.



**Coastal Bend: Riparian Grassland**

Area in Phase 3: 24,641 acres (9,972 ha)

Description of Mapped Type: Upland drainage ways within pastures with grasses such as threeawns, King Ranch bluestem, bristlegrass species, Bermudagrass, and Dichanthelium species characterize this type. Trees and shrubs such as mesquite, huisache, sugar hackberry, cedar elm, and live oak may form a sparse canopy.



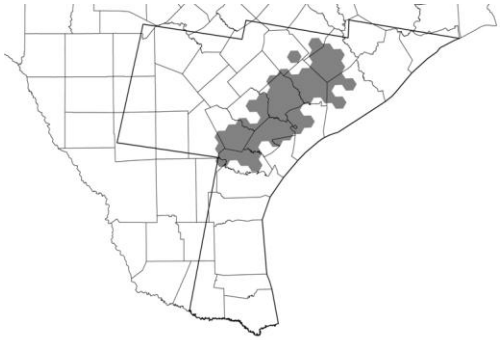
**Coastal Bend: Riparian Hardwood Forest**

Area in Phase 3: 11,033 acres (4,465 ha)

Description of Mapped Type: Narrow upland strips along water ways dominated by trees such as sugar hackberry, cedar elm, black willow, mesquite, and huisache are common within this mapped type. Smaller trees and shrubs such as yaupon, possumhaw, and black willow may grow in less dense openings.

Where to Visit:

Lake Texana



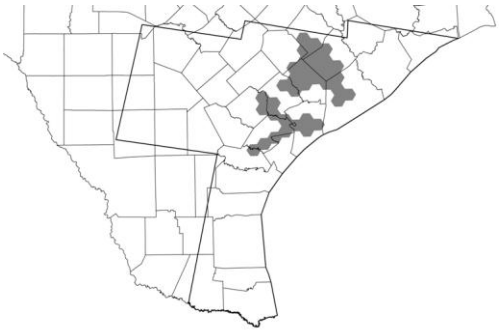
**Coastal Bend: Riparian Herbaceous Wetland**

Area in Phase 3: 520 acres (210 ha)

Description of Mapped Type: A variety of herbaceous sedges, rushes, spikerushes, bulrushes, smartweeds, and grasses, together with shrubs such as buttonbush and black willow may be important in this mapped type. .

Where to Visit:

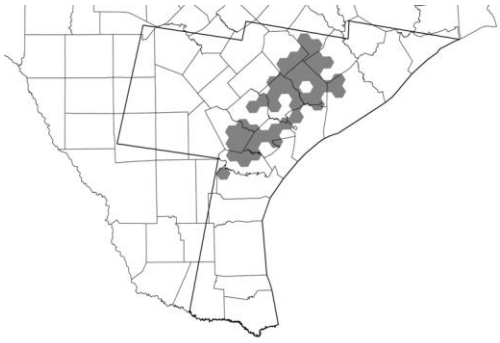
Lake Texana



**Coastal Bend: Riparian Live Oak / Hardwood Forest**

Area in Phase 3: 1,613 acres (653 ha)

Description of Mapped Type: Narrow strips of woodland along drainage ways with species such as live oak, cedar elm, sugar hackberry, anacua (southwest), Chinese tallow (northeast), and black willow are characteristic of this type. Mesquite, huisache, colima (southwest), and possumhaw may occur as shrubs or small trees in openings.



**Coastal Bend: Riparian Live Oak Forest**

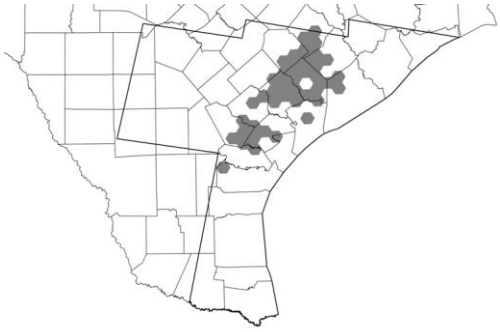
Area in Phase 3: 6,034 acres (2,442 ha)

Description of Mapped Type: Gallery woodlands along drainage ways with live oak mixed with species such as cedar elm, sugar hackberry, anacua (southwest), and black willow are characteristic of this type.

Where to Visit:

Lake Texana

Welder Wildlife Refuge



**Coastal: Fresh and Intermediate Tidal Marsh**

Area in Phase 3: 10,977 acres (4,442 ha)

Description of Mapped Type: This mapped type includes a variety of marsh types that may vary from year to year based primarily on storm events and precipitation, and across small areas due to small variations in elevation. A variety of herbaceous sedges, rushes, spikerushes, bulrushes, smartweeds, cattail, and grasses, together with shrubs such as buttonbush, black willow, and baccharis species may be important in this type.

Where to Visit:

Texas City Prairie Preserve

**Coastal: Mangrove Shrubland**

Area in Phase 3: 3,711 acres (1,502 ha)

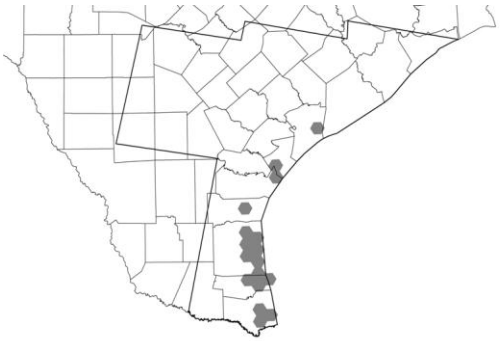
Description of Mapped Type: Regularly flooded shrublands or low woodlands with black mangrove and salt tolerant species such as smooth cordgrass, saltgrass, Sea ox-eye daisy, saltwort, and Carolina wolfberry may be important in this type.

Where to Visit:

Aransas National Wildlife Refuge

Laguna Atascosa National Wildlife Refuge

Padre Island National Seashore

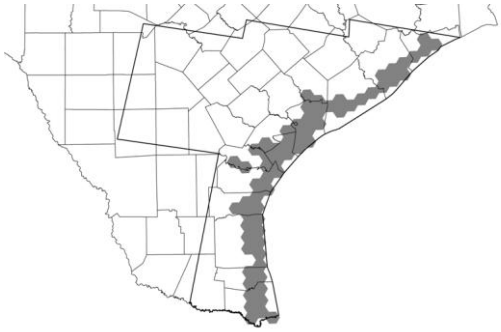


**Coastal: Salt and Brackish High Tidal Marsh**

Area in Phase 3: 188,385 acres (76,237 ha)

Description of Mapped Type: This mapped type includes a variety of tidal-influenced marsh types that may vary from year to year based primarily on storm events and precipitation, and across small areas due to small variations in elevation. Important species may include marshhay cordgrass, saltgrass, three-square bulrush, and seashore paspalum.

Where to Visit:



Aransas National Wildlife Refuge

Big Boggy National Wildlife Refuge

Brazoria National Wildlife Refuge

Galveston Island State Park

Laguna Atascosa National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge

Matagorda Bay Nature Park

Mustang Island State Park

Padre Island National Seashore

Palo Alto Battlefield National Historic Site

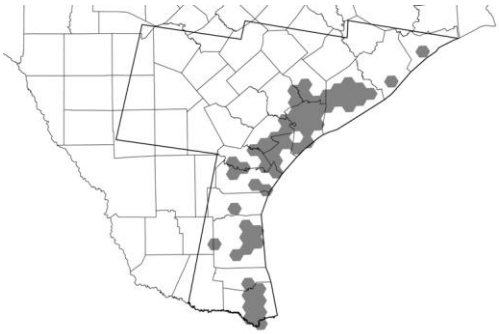
San Bernard National Wildlife Refuge

**Coastal: Salt and Brackish High Tidal Shrub Wetland**

Area in Phase 3: 7,862 acres (3,182 ha)

Description of Mapped Type: This type is mapped in limited areas and may include shrub species such as baccharis or shrubby sumpweed together with herbaceous species such as marshhay cordgrass, bulrush species, and seashore paspalum.

Where to Visit:



Aransas National Wildlife Refuge

Big Boggy National Wildlife Refuge

Laguna Atascosa National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge

Padre Island National Seashore

**Coastal: Salt and Brackish Low Tidal Marsh**

Area in Phase 3: 139,902 acres (56,616 ha)

Description of Mapped Type: This mapped type includes a variety of tidal-influenced marsh types that may vary from year to year based primarily on storm events and precipitation, and across small areas due to small variations in elevation. Smooth cordgrass is a common species, along with other salt-tolerant species such as three-square bulrush, marshhay cordgrass, seashore paspalum, saltgrass, and blackrush.

Where to Visit:

Aransas National Wildlife Refuge

Big Boggy National Wildlife Refuge

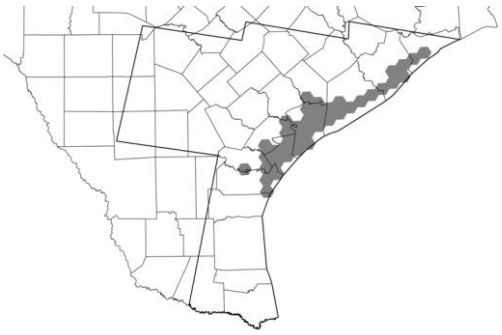
Brazoria National Wildlife Refuge

Galveston Island State Park

Matagorda Bay Nature Park

Mustang Island State Park

San Bernard National Wildlife Refuge

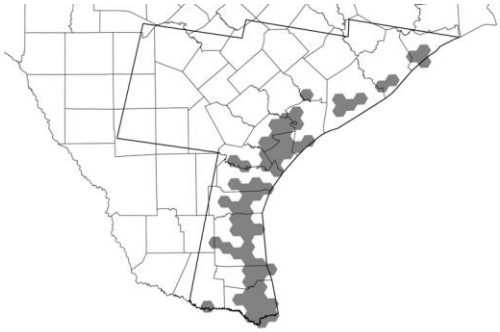


**Coastal: Sea Ox-eye Daisy Flats**

Area in Phase 3: 63,231 acres (25,589 ha)

Description of Mapped Type: Sparse, low shrublands with salt-tolerant species such as sea ox-eye daisy, Carolina wolfberry, saltwort, gutta-percha, and tornillo characterize this type. Mesquite may be scattered and species such as annual seepweed, marshhay cordgrass, Gulf cordgrass, saltgrass, seashore grass, and glasswort may be present. Some areas at higher elevation, especially loams, are mapped within this type.

Where to Visit:



Aransas National Wildlife Refuge

Galveston Island State Park

Laguna Atascosa National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge - Boca Chica

Lower Rio Grande Valley National Wildlife Refuge – Loma Preserve

Lower Rio Grande Valley National Wildlife Refuge – Vista del Mar

Mustang Island State Park

Padre Island National Seashore

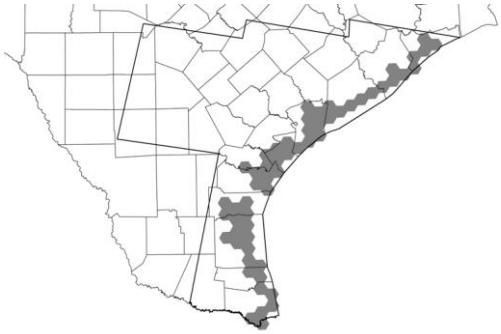
Palo Alto Battlefield National Historic Site

**Coastal: Tidal Flat**

Area in Phase 3: 40,099 acres (16,228 ha)

Description of Mapped Type: This type is largely unvegetated because it is inundated frequently and for extended periods by tidal fluctuations.

Where to Visit:



Aransas National Wildlife Refuge

Brazoria National Wildlife Refuge

Mustang Island State Park

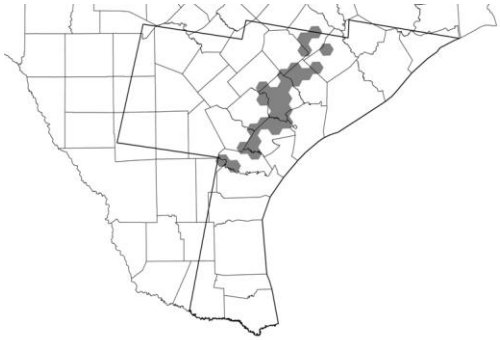
Padre Island National Seashore

San Bernard National Wildlife Refuge

**Coastal Plain: Terrace Sandyland Grassland**

Area in Phase 3: 9,790 acres (3,962 ha)

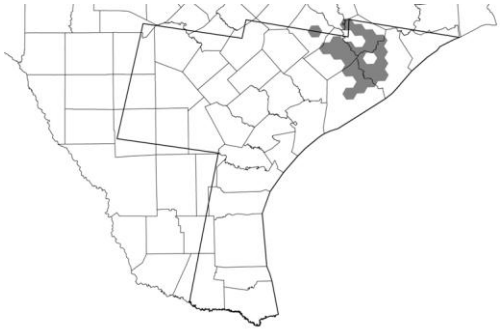
Description of Mapped Type: Grasslands may be in various conditions, and important species may include little bluestem, big bluestem, Pan American balsamscale, crinkleawn, thin paspalum, brownseed paspalum, common sandbur, pineywoods dropseed, lovegrasses, and threeawns. Forbs of these sandy soils include heartsepal wild-buckwheat, Florida snake-cotton, parks croton, sand leaf-flower, camphor goldenaster, and southern jointweed.



**Columbia Bottomlands: Deciduous Shrubland**

Area in Phase 3: 29,970 acres (12,128 ha)

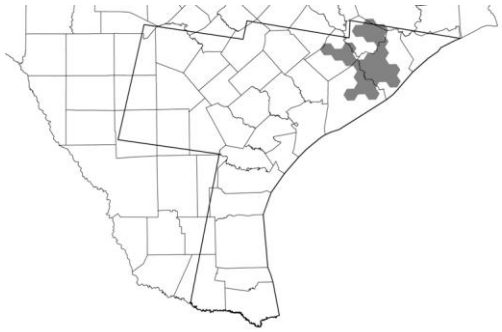
Description of Mapped Type: Mainly disturbance shrublands and sparse woodlands are characteristic of this type. Species such as huisache, sugar hackberry, water oak, cedar elm, black willow, mesquite, Chinese tallow, and green ash are common. Some wetter sites may be dominated by common buttonbush and/or swamp privet.



**Columbia Bottomlands: Evergreen Shrubland**

Area in Phase 3: 31,707 acres (12,832 ha)

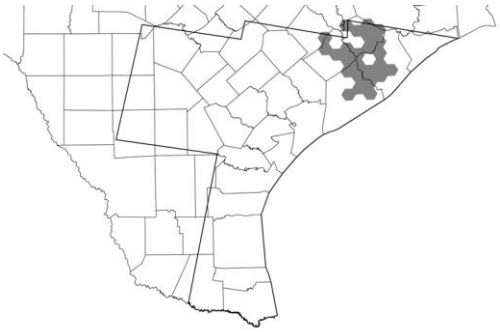
Description of Mapped Type: A variety of mainly disturbance shrublands with species such as huisache, Baccharis species, Macartney rose, Chinese tallow, yaupon, dwarf palmetto, baccharis, and possumhaw characterize this type. Sparse tree cover with species such as live oak, water oak, sugar hackberry, black willow, cedar elm, and green ash may also occur.



**Columbia Bottomlands: Grassland**

Area in Phase 3: 248,898 acres (100,725 ha)

Description of Mapped Type: This type may include grazed pasture or tame meadows with species such as Bermudagrass, kleingrass, Johnsongrass, bahiagrass, Vaseygrass, lovegrasses, broomsedge bluestem, little bluestem, brownseed paspalum, sedges, and rushes. Sparse tree and shrub cover may include pecan, live oak, sugar hackberry, cedar elm, baccharis species, and Chinese tallow. .



**Columbia Bottomlands: Hardwood Forest and Woodland**

Area in Phase 3: 384,754 acres (155,704 ha)

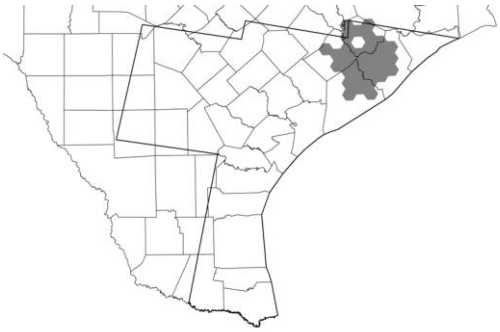
Description of Mapped Type: This type includes a wide variety of successional and more mature forests as well as encompassing wetter and drier sties. Common species include water oak, sugar hackberry, cedar elm, green ash, pecan, live oak, Shumard oak and American elm. Yaupon is a common understory shrub and dwarf palmetto is common on wetter sites.

Where to Visit:

Brazoria National Wildlife Refuge

Brazos Bend State Park

San Bernard National Wildlife Refuge



**Columbia Bottomlands: Herbaceous Wetland**

Area in Phase 3: 17,068 acres (6,907 ha)

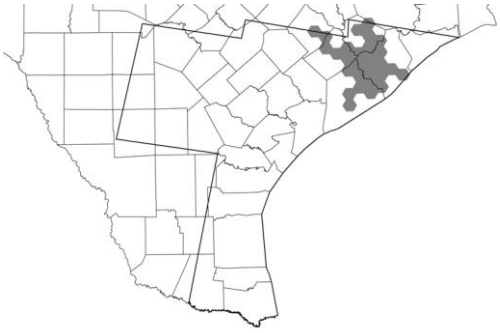
Description of Mapped Type: A variety of herbaceous sedges, rushes, spikerushes, bulrushes, smartweeds, cattail, and grasses, together with shrubs such as buttonbush, black willow, and Chinese tallow may be important in this type.

Where to Visit:

Brazoria National Wildlife Refuge

Brazos Bend State Park

San Bernard National Wildlife Refuge



**Columbia Bottomlands: Live Oak Forest and Woodland**

Area in Phase 3: 48,185 acres (19,500 ha)

Description of Mapped Type: Live oak may form nearly pure stands or may occur together with species such as water oak, sugar hackberry, cedar elm, pecan, and green ash. Yaupon, dwarf palmetto, and roughleaf dogwood are common understory species.

Where to Visit:

Brazoria National Wildlife Refuge

Brazos Bend State Park

San Bernard National Wildlife Refuge

**Columbia Bottomlands: Mixed Evergreen / Hardwood Forest and Woodland**

Area in Phase 3: 34,023 acres (13,769 ha)

Description of Mapped Type: : Live oak together with species such as water oak, sugar hackberry, cedar elm, pecan, and green ash may be important in this type. Yaupon and dwarf palmetto are common understory species.

Where to Visit:

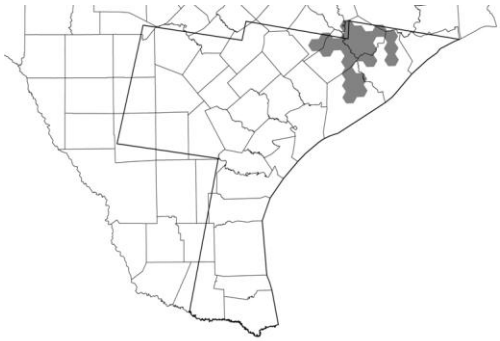
Brazos Bend State Park

San Bernard National Wildlife Refuge

**Columbia Bottomlands: Riparian Deciduous Shrubland**

Area in Phase 3: 1,305 acres (528 ha)

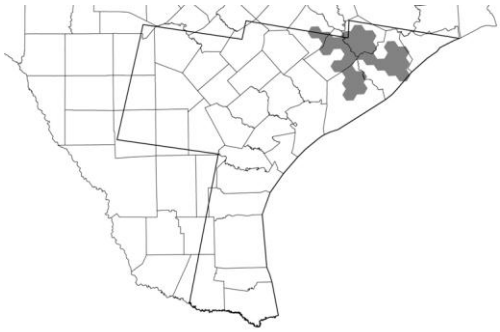
Description of Mapped Type: Narrow strips of wetland along drainage ways with buttonbush, swamp privet, black willow, green ash, Chinese tallow and herbaceous wetland plants such as sedges, rushes, and spikerushes characterize this type.



**Columbia Bottomlands: Riparian Evergreen Shrubland**

Area in Phase 3: 543 acres (220 ha)

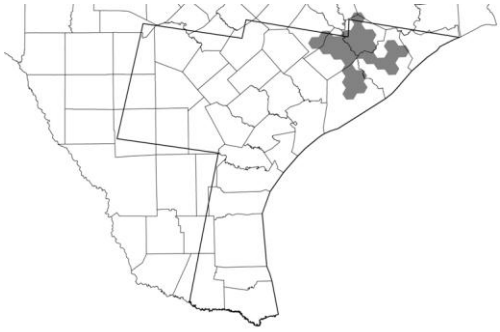
Description of Mapped Type: Relatively dense disturbance shrublands or low woodlands along upland drainage ways with species such as Macartney rose, huisache, sugar hackberry, live oak, yaupon, and mesquite are characteristic of this type.



**Columbia Bottomlands: Riparian Grassland**

Area in Phase 3: 10,399 acres (4,208 ha)

Description of Mapped Type: Upland drainage ways within pastures with grasses such as paspalum species, threeawns, King Ranch bluestem, bristlegrass species, Bermudagrass, and rosette grasses characterize this type. Trees and shrubs such as mesquite, huisache, yaupon, sugar hackberry, cedar elm, and live oak may form a sparse canopy.



**Columbia Bottomlands: Riparian Hardwood Forest and Woodland**

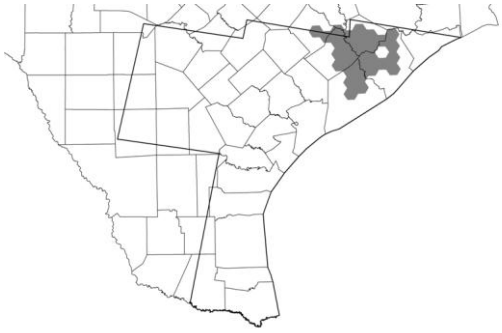
Area in Phase 3: 8,329 acres (3,371 ha)

Description of Mapped Type: Narrow upland strips along waterways dominated by trees such as huisache, sugar hackberry, cedar elm, black willow, Chinese tallow, and mesquite, are common within this mapped type.

Where to Visit:

Brazos Bend State Park

San Bernard National Wildlife Refuge



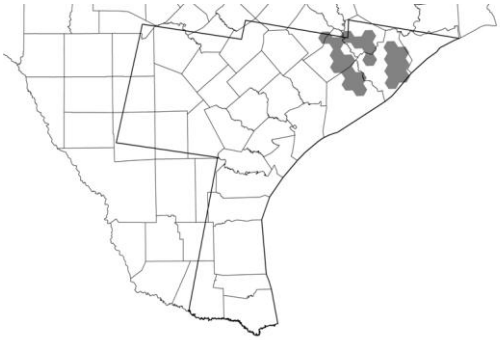
**Columbia Bottomlands: Riparian Herbaceous Wetland**

Area in Phase 3: 479 acres (194 ha)

Description of Mapped Type: : A variety of herbaceous sedges, rushes, spikerushes, bulrushes, smartweeds, and grasses, together with shrubs such as buttonbush and black willow may be important in this mapped type.

Where to Visit:

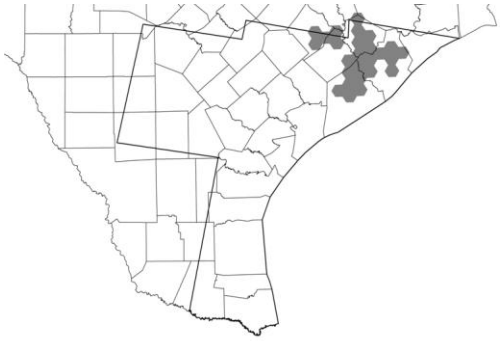
Brazoria National Wildlife Refuge



**Columbia Bottomlands: Riparian Live Oak Forest and Woodland**

Area in Phase 3: 824 acres (334 ha)

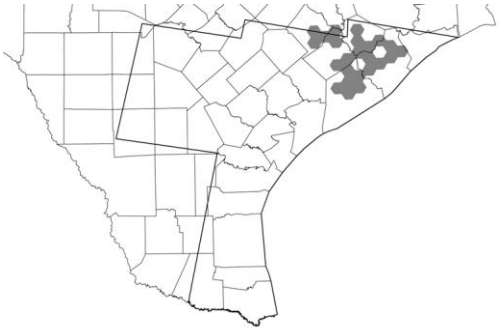
Description of Mapped Type: Narrow strips of woodland along drainage ways with live oak in nearly pure stands or mixed with deciduous trees such as cedar elm, sugar hackberry, pecan, green ash, Chinese tallow, and black willow are characteristic of this type. Yaupon, huisache, mesquite, and possumhaw may occur as shrubs or small trees in openings.



**Columbia Bottomlands: Riparian Mixed Evergreen / Hardwood Forest and Woodland**

Area in Phase 3: 556 acres (225 ha)

Description of Mapped Type: Narrow strips of woodland along drainage ways with live oak in nearly pure stands or mixed with deciduous trees such as cedar elm, sugar hackberry, pecan, Chinese tallow, and black willow are characteristic of this type.



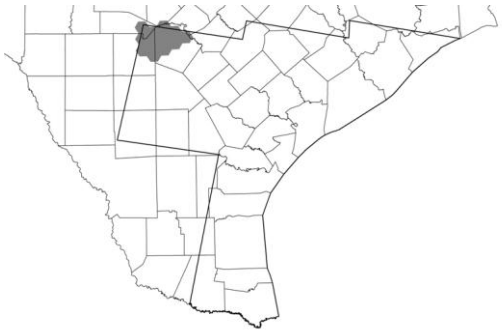
**Edwards Plateau: Ashe Juniper / Live Oak Shrubland**

Area in Phase 3: 27,398 acres (11,088 ha)

Description of Mapped Type: Ashe juniper and plateau live oak are the most frequent dominants of this evergreen shrubland. Plateau live oak trees may form a sparse canopy and white shin oak, Texas persimmon, Texas mountain-laurel, and evergreen sumac are common components.

Where to Visit:

Government Canyon State Natural Area



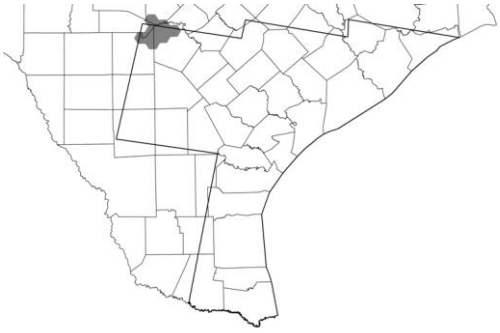
**Edwards Plateau: Ashe Juniper / Live Oak Slope Shrubland**

Area in Phase 1: 2,930 acres (1,186 ha)

Description of Mapped Type: This type is similar to the Edwards Plateau: Ashe Juniper / Live Oak Shrubland but is mapped on slopes >20%, and Ashe juniper is more often the primary dominant. Species such as evergreen sumac and Lindheimer's silk-tassel are more frequent on this type versus the former.

Where to Visit:

Government Canyon State Natural Area



**Edwards Plateau: Ashe Juniper Motte and Woodland**

Area in Phase 3: 54,369 acres (22,002 ha)

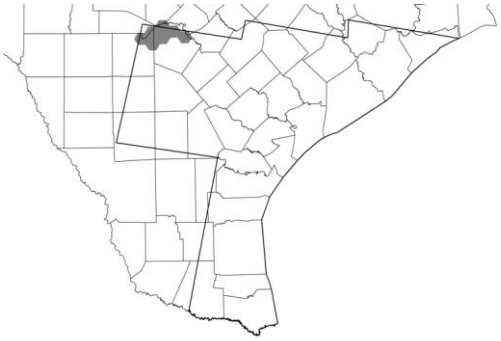
Description of Mapped Type: Ashe juniper and plateau live oak are the most frequent dominants of this evergreen woodland. Some areas are characterized by nearly pure stands of Ashe juniper, while others have taller plateau live oaks with an understory of smaller Ashe juniper. White shin oak, Texas persimmon, and agarito are common shrubs.

Where to Visit:

Friedrich Wilderness Park

Government Canyon State Natural Area

Schnabel Park



**Edwards Plateau: Ashe Juniper Slope Forest**

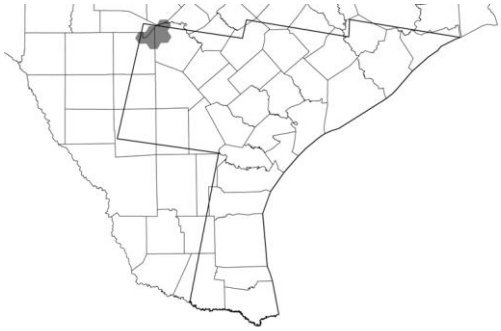
Area in Phase 3: 20,124 acres (8,144 ha)

Description of Mapped Type: Ashe juniper and plateau live oak are often the dominant species of this mainly evergreen woodland or forest, and other oaks such as Texas oak, and white shin oak may be important. Ashe juniper is often the most important understory species, along with species such as Texas persimmon, Texas mountain-laurel, and fragrant mimosa.

Where to Visit:

Friedrich Wilderness Park

Government Canyon State Natural Area



**Edwards Plateau: Deciduous Oak / Evergreen Motte and Woodland**

Area in Phase 3: 10,501 acres (4,249 ha)

Description of Mapped Type: This mixed woodland type contains significant variation, but deciduous oaks such as Texas oak and white shin oak, are often important in the overstory, together with Ashe juniper, plateau live oak, cedar elm, or sugar hackberry. The understory often contains Ashe juniper and plateau live oak, and Texas persimmon, agarito, and Texas mountain-laurel are common components.

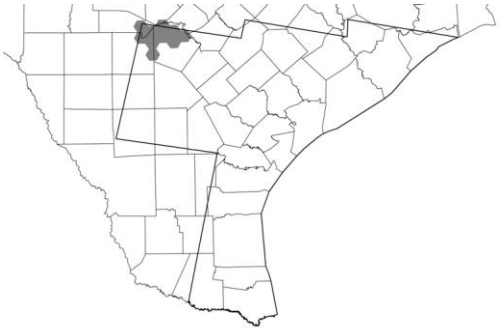
Where to Visit:

Friedrich Wilderness Park

Government Canyon State Natural Area

McAllister Park

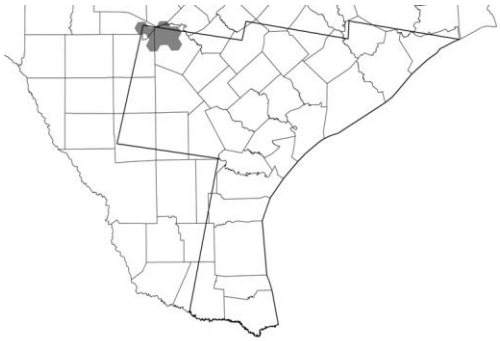
Olmos Basin Park



**Edwards Plateau: Floodplain Ashe Juniper Forest**

Area in Phase 3: 388 acres (157 ha)

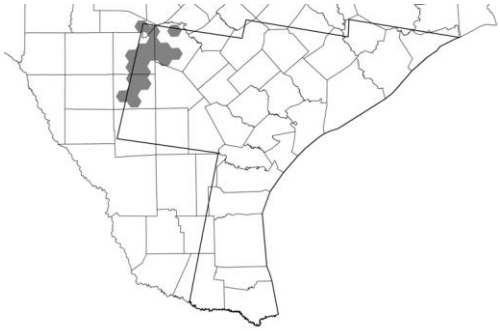
Description of Mapped Type: Ashe juniper and plateau live oak are frequent canopy dominants of this primarily disturbance woodland or forest, and cedar elm and sugar hackberry are common components.



**Edwards Plateau: Floodplain Ashe Juniper Shrubland**

Area in Phase 3: 1,004 acres (406 ha)

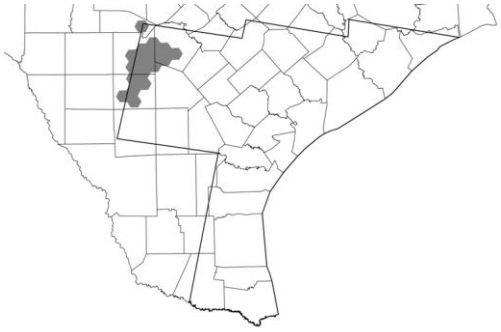
Description of Mapped Type: Ashe juniper, plateau live oak, mesquite, and Texas persimmon are frequent components of this mainly disturbance evergreen shrubland.



**Edwards Plateau: Floodplain Deciduous Shrubland**

Area in Phase 3: 9,140 acres (3,699 ha)

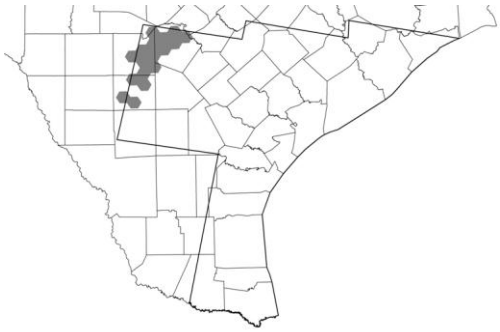
Description of Mapped Type: This type contains various shrublands, and mesquite, cedar elm, plateau live oak (trees or shrubs), sugar hackberry, and huisache are common dominants. Western soapberry, little walnut, Ashe juniper, and buttonbush may be components.



**Edwards Plateau: Floodplain Hardwood / Ashe Juniper Forest**

Area in Phase 3: 1,805 acres (730 ha)

Description of Mapped Type: Ashe juniper trees or shrubs are a primary component of this mixed forest type. Cedar elm, plateau live oak, pecan, American elm, sugar hackberry, pecan, black willow, ash species, and sycamore may be present.



**Edwards Plateau: Floodplain Hardwood Forest**

Area in Phase 3: 19,568 acres (7,919 ha)

Description of Mapped Type: Cedar elm, sugar hackberry, American elm, pecan, plateau live oak, bur oak, western soapberry, Arizona walnut, and green ash, are common components of this broadly-circumscribed mainly deciduous forest. Understory species may include gum bumelia, roughleaf dogwood, red mulberry, Texas persimmon, western soapberry, colima, and possumhaw.

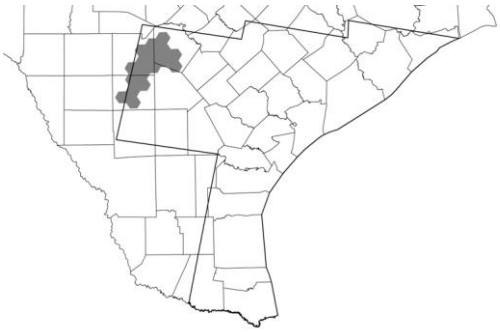
Where to Visit:

Government Canyon State Natural Area

Leon Creek Greenbelt

McAllister Park

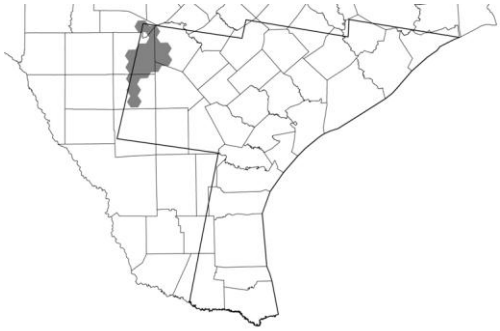
Medina River Park



**Edwards Plateau: Floodplain Herbaceous Vegetation**

Area in Phase 3: 16,523 acres (6,687 ha)

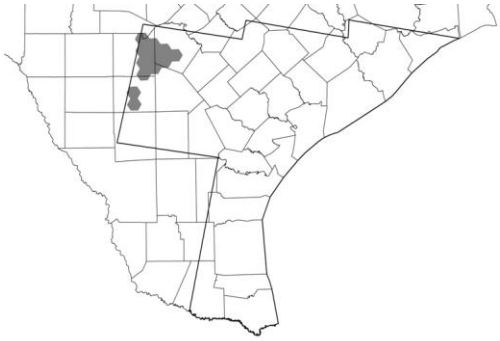
Description of Mapped Type: This type circumscribes various grasslands, including many pastures dominated by Bermudagrass or King Ranch bluestem. Native species that may be present, including switchgrass, bushy bluestem, broomsedge bluestem, Virginia wildrye, bristlegrass species, paspalum species, rosette grasses, Texas wintergrass, little barley, and Lindheimer muhly. Plateau live oak, Ashe juniper, mesquite, huisache, cedar elm, and sugar hackberry are often components of these grasslands.



**Edwards Plateau: Floodplain Herbaceous Wetland**

Area in Phase 3: 453 acres (183 ha)

Description of Mapped Type: A variety of herbaceous sedges, rushes, spikerushes, bulrushes, smartweeds, and grasses, together with shrubs such as buttonbush and black willow may be common in this mapped type.



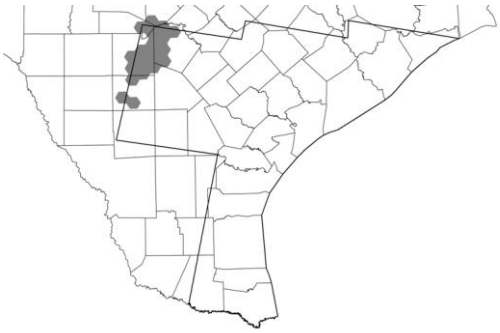
**Edwards Plateau: Floodplain Live Oak Forest**

Area in Phase 1: 3,372 acres (1,365 ha)

Description of Mapped Type: Plateau live oak is a dominant canopy tree, together with deciduous trees such as cedar elm, sugar hackberry, and pecan. Ashe juniper may be present as a tree or understory shrub.

Where to Visit:

Government Canyon State Natural Area



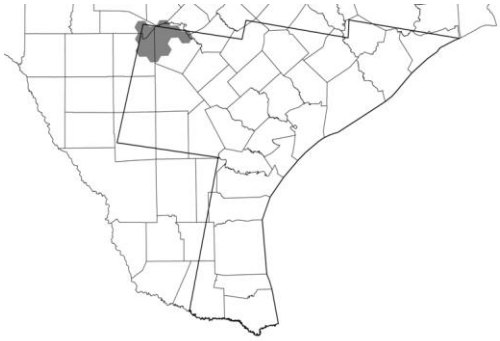
**Edwards Plateau: Live Oak Motte and Woodland**

Area in Phase 3: 59,343 acres (24,015 ha)

Description of Mapped Type: Plateau live oak alone or with Ashe juniper usually dominates the overstory of this type. Deciduous trees such as cedar elm, sugar hackberry, and Texas oak may be components. Shrubs such as mesquite, Texas persimmon, agarito, huisache, colima, and evergreen sumac may be present.

Where to Visit:

Government Canyon State Natural Area



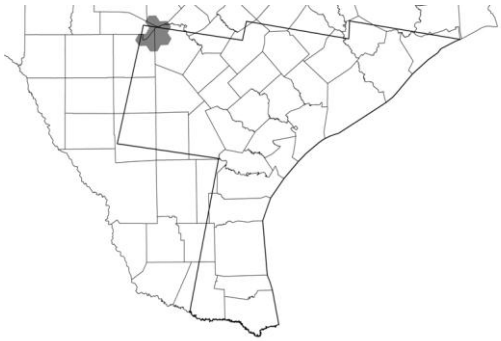
**Edwards Plateau: Live Oak Slope Forest**

Area in Phase 3: 5,764 acres (2,333 ha)

Description of Mapped Type: Plateau live oak is the most important tree of this mainly evergreen slope woodland or forest, but Ashe juniper and deciduous trees such as Texas oak, white shin oak, cedar elm, and sugar hackberry may be important in the overstory. The understory may contain Ashe juniper along with species such as Texas persimmon and Texas mountain-laurel.

Where to Visit:

Government Canyon State Natural Area



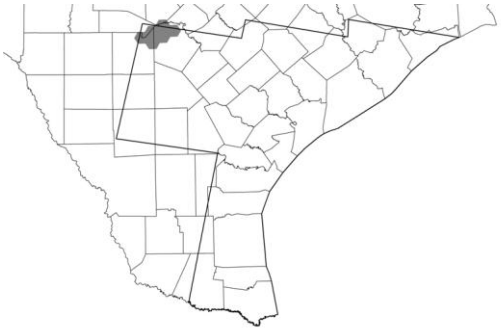
**Edwards Plateau: Oak / Ashe Juniper Slope Forest**

Area in Phase 3: 1,946 acres (787 ha)

Description of Mapped Type: Deciduous oaks such as Texas oak, white shin oak, and chinkapin oak, share dominance with Ashe juniper in this mixed woodland or forest. Other trees such as live oak, cedar elm, sugar hackberry, escarpment black cherry, and Arizona walnut may be in the canopy. Understory species may include red buckeye, Texas redbud, and roughleaf dogwood.

Where to Visit:

Friedrich Wilderness Park

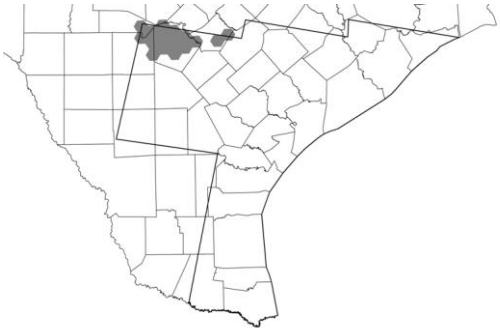


**Edwards Plateau: Oak / Hardwood Motte and Woodland**

Area in Phase 3: 23,909 acres (9,675 ha)

Description of Mapped Type: This deciduous woodland or forest may contain a diversity of species in the overstory, including cedar elm, Texas oak, sugar hackberry, post oak, white shin oak, or pecan. Plateau live oak is often an important component, and Ashe juniper may be in the overstory as well as the understory.

Where to Visit:



Friedrich Wilderness Park

Government Canyon State Natural Area

McAllister Park

**Edwards Plateau: Oak / Hardwood Slope Forest**

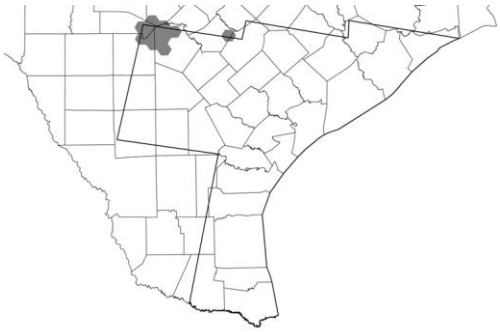
Area in Phase 1: 2,249 acres (910 ha)

Description of Mapped Type: A fairly wide diversity of deciduous trees such as Texas oak, white shin oak, chinkapin oak, escarpment black cherry, cedar elm, and sugar hackberry may be in the overstory of this mainly deciduous woodland or forest. Plateau live oak is often important in the canopy. The understory may also contain a diversity of woody plants such as elbowbush, roughleaf dogwood, Texas redbud, red buckeye, Mexican buckeye, Jersey tea, Carolina buckthorn, and rusty blackhaw.

Where to Visit:

Friedrich Wilderness Park

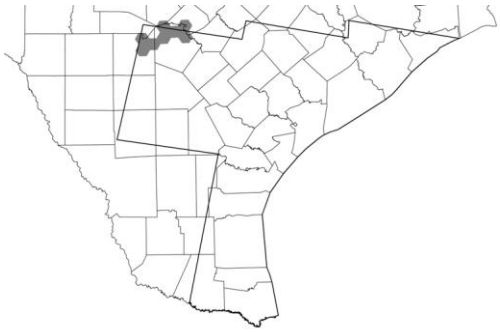
Government Canyon State Natural Area



**Edwards Plateau: Post Oak Motte and Woodland**

Area in Phase 3: 2,793 acres (1,130 ha)

Description of Mapped Type: Post oak and plateau live oak are often the most important overstory dominants of this mainly deciduous woodland, and cedar elm, blackjack oak, Texas oak, and sugar hackberry are often present. Ashe juniper may be in the overstory and understory.



**Edwards Plateau: Riparian Ashe Juniper Forest**

Area in Phase 3: 1,178 acres (477 ha)

Description of Mapped Type: Ashe juniper, plateau live oak, and sugar hackberry are common dominants of this narrow evergreen woodland along mainly first-order streams.

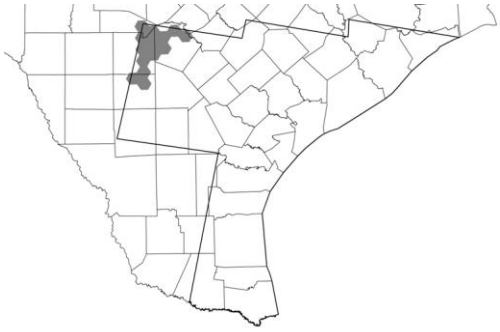
Where to Visit:

Government Canyon State Natural Area

**Edwards Plateau: Riparian Ashe Juniper Shrubland**

Area in Phase 3: 252 acres (102 ha)

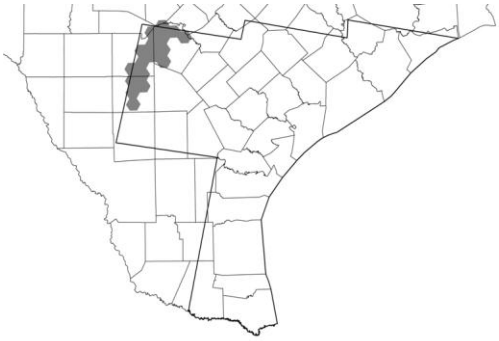
Description of Mapped Type: Ashe juniper and Texas persimmon are common dominants of this narrow evergreen shrubland along mainly first-order streams. Plateau live oak, cedar elm, sugar hackberry, or Texas oak trees may form a sparse canopy.



**Edwards Plateau: Riparian Deciduous Shrubland**

Area in Phase 3: 2,233 acres (904 ha)

Description of Mapped Type: A variety of small trees or shrubs such as black willow, sugar hackberry, mesquite, desert willow, Baccharis, Texas persimmon, or whitebrush may dominate this broadly circumscribed type that occurs mainly along first order drainages.



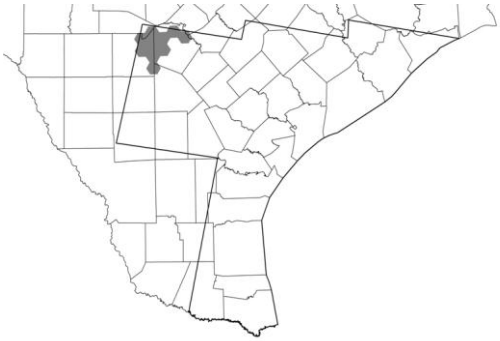
**Edwards Plateau: Riparian Hardwood / Ashe Juniper Forest**

Area in Phase 3: 673 acres (272 ha)

Description of Mapped Type: Ashe juniper and plateau live oak are the frequent dominant trees of this mixed forest, and cedar elm, sycamore, green ash, and sugar hackberry are common trees.

Where to Visit:

Government Canyon State Natural Area



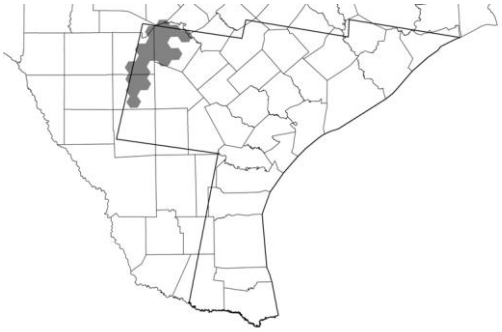
**Edwards Plateau: Riparian Hardwood Forest**

Area in Phase 3: 2,464 acres (997 ha)

Description of Mapped Type: This narrow, deciduous forest along mainly first-order streams may contain cedar elm, plateau live oak, Texas oak, sugar hackberry, American sycamore, green ash, pecan, or boxelder as important overstory trees. Ashe juniper, elbowbush, Texas persimmon, whitebrush, false-willow, or buttonbush may be present in the shrub layer.

Where to Visit:

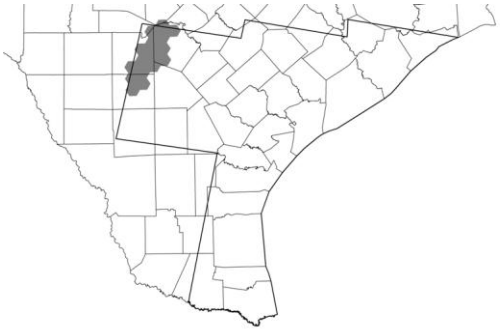
Government Canyon State Natural Area



**Edwards Plateau: Riparian Herbaceous Vegetation**

Area in Phase 3: 3,770 acres (1,526 ha)

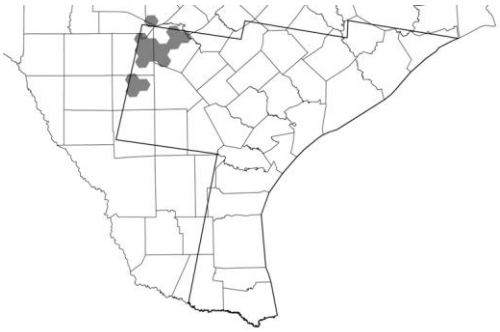
Description of Mapped Type: This is a broadly-defined grassland that is often dominated by King Ranch bluestem or Bermudagrass in the modern landscape, and Johnsongrass is a common component. Plateau live oak and Ashe juniper trees or shrubs often form a sparse canopy.



**Edwards Plateau: Riparian Herbaceous Wetland**

Area in Phase 3: 73 acres (29 ha)

Description of Mapped Type: A variety of herbaceous sedges, rushes, spikerushes, bulrushes, smartweeds, and grasses, together with shrubs such as black willow and buttonbush may be common in this mapped type.



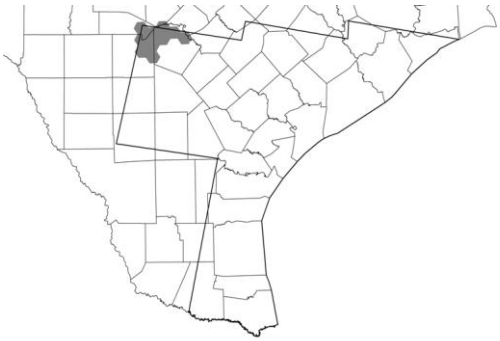
**Edwards Plateau: Riparian Live Oak Forest**

Area in Phase 3: 2,880 acres (1,166 ha)

Description of Mapped Type: Plateau live oak and Ashe juniper are the common canopy dominants of this mainly evergreen forest. Other important species may include sugar hackberry, pecan, Texas oak, and cedar elm.

Where to Visit:

Government Canyon State Natural Area



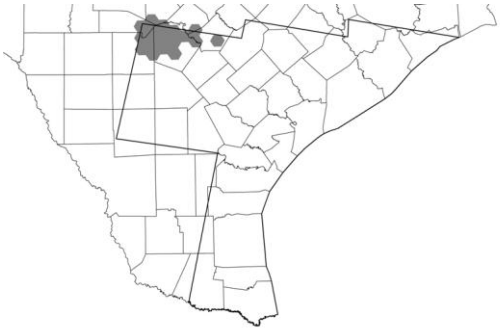
**Edwards Plateau: Savanna Grassland**

Area in Phase 3: 31,189 acres (12,622 ha)

Description of Mapped Type: Grassland condition varies for this type, but many areas contain non-native King Ranch bluestem as an important species, and Bermudagrass is also frequent. Common native grasses include little bluestem, sideoats grama, silver bluestem, Texas wintergrass, purple threeawn, and common curlymesquite. Trees and shrubs are usually present, and may include plateau live oak, Ashe juniper, mesquite, agarito, or cedar elm.

Where to Visit:

Government Canyon State Natural Area



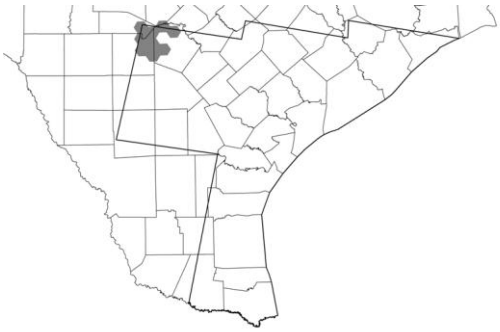
**Edwards Plateau: Shin Oak Shrubland**

Area in Phase 3: 11,137 acres (4,507 ha)

Description of Mapped Type: White shin oak is the most common dominant of these shrublands, and plateau live oak and Ashe juniper are components. Plateau live oak or Texas oak may forma sparse tree canopy, and mesquite is a common component along with species such as Texas persimmon, agarito, elbowbush, Texas redbud, and skunkbush sumac.

Where to Visit:

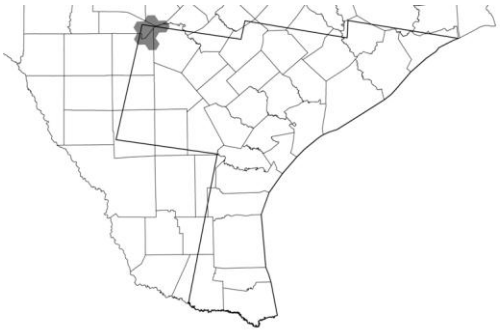
Government Canyon State Natural Area



**Edwards Plateau: Shin Oak Slope Shrubland**

Area in Phase 3: 439 acres (178 ha)

Description of Mapped Type: This type is similar to the Edwards Plateau: Shin Oak Shrubland but is mapped on slopes >20%. Species such as evergreen sumac and Lindheimer's silk-tassel may be more common on this type.



**Gulf Coast: Coastal Prairie**

Area in Phase 3: 2,287,784 acres (925,833 ha)

Description of Mapped Type: A variety of grasslands are circumscribed by this mapped type, and species such as Bermudagrass, King Ranch bluestem, bahiagrass, rat-tail smutgrass, broomsedge bluestem, little bluestem, and brownseed paspalum may be dominant. Live oak is the most common tree component, and shrubs such as huisache, Macartney rose, mesquite, baccharis, or Chinese tallow, may be present.

Where to Visit:

Aransas National Wildlife Refuge

Armand Bayou County Preserve

Big Boggy National Wildlife Refuge

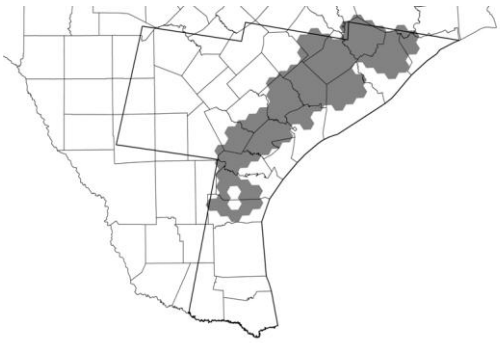
Brazoria National Wildlife Refuge

Brazos Bend State Park

Lake Texana

San Bernard National Wildlife Refuge

Welder Wildlife Refuge



**Gulf Coast: Coastal Prairie Pondshore**

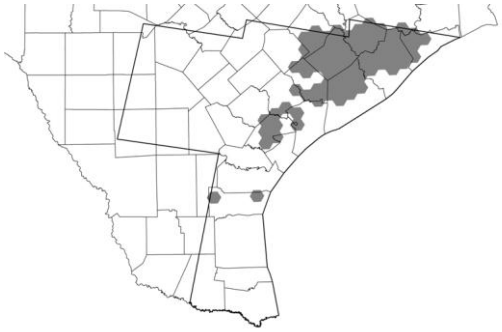
Area in Phase 3: 64,211 acres (25,985 ha)

Description of Mapped Type: Herbaceous or sparse woody cover is characteristic of this type, and species such as sedges, bulrushes, spikerushes, switchgrass, bushy bluestem, maidencane, and emergent aquatics may be important. Woody species such as Chinese tallow, sugar hackberry, rattlebox senna, and black willow may also form sparse tree or shrub cover.

Where to Visit:

Brazoria National Wildlife Refuge

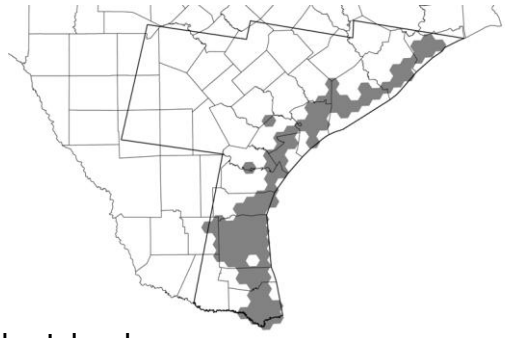
Lake Texana



**Gulf Coast: Salty Prairie**

Area in Phase 3: 536,682 acres (217,187 ha)

Description of Mapped Type: Gulf cordgrass may form nearly pure stands within this mapped type, or may form mosaics with marshhay cordgrass or saltgrass at slightly lower elevations or species such as Bermudagrass and little bluestem at slightly higher elevations. Other common grasses include Gulf muhly, shoregrass, switchgrass, and bushy bluestem, and shrubs such as baccharis, mesquite, or shrubby sumpweed may also occur.



Where to Visit:

Aransas National Wildlife Refuge

Brazoria National Wildlife Refuge

Galveston Island State Park

Laguna Atascosa National Wildlife Refuge

Laguna Atascosa National Wildlife Refuge - South Padre Island

Mustang Island State Park

Padre Island National Seashore

Palo Alto Battlefield National Historic Site

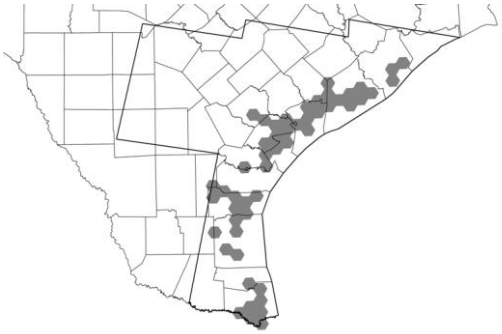
San Bernard National Wildlife Refuge

**Gulf Coast: Salty Prairie Shrubland**

Area in Phase 3: 34,813 acres (14,088 ha)

Description of Mapped Type: This type is dominated by a mix of shrubs such as baccharis, mesquite, huisache, Chinese tallow, and shrubby sumpweed together with grasses such as Gulf cordgrass, Gulf muhly, and rat-tail smutgrass. Spiny aster may also be a conspicuous dominant.

Where to Visit:



Aransas National Wildlife Refuge

Big Boggy National Wildlife Refuge

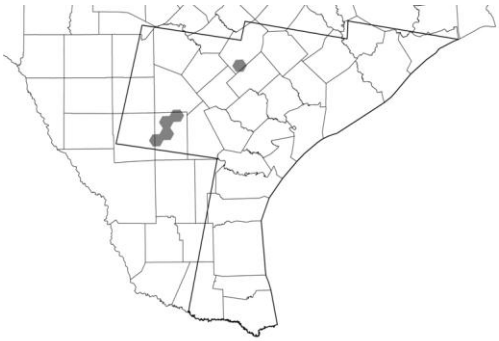
Brazoria National Wildlife Refuge

Laguna Atascosa National Wildlife Refuge

**Inland: Salty Flat**

Area in Phase 3: 109 acres (44 ha)

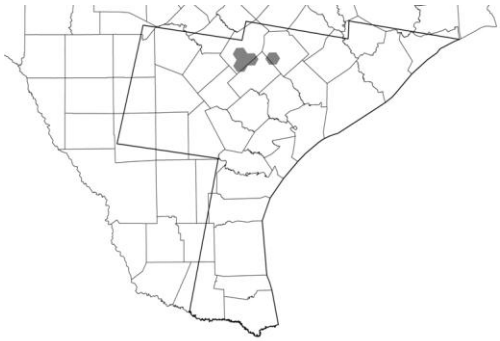
Description of Mapped Type: This type may be more or less salty and is generally unvegetated or sparsely vegetated with species such as seepweed, saltgrass, whorled dropseed, and saltwort.



**Inland: Salty Prairie**

Area in Phase 3: 2,470 acres (1,000 ha)

Description of Mapped Type: Gulf cordgrass may form nearly pure stands or may form mosaics with saltgrass, shoregrass, salt-tolerant herbaceous species and shrubs, and grasses of less saline soils such as King Ranch bluestem, Bermudagrass and little bluestem. Mesquite, baccharis, huisache, Lindheimer pricklypear, and sumpweed may also occur.



**Inland: Salty Prairie Shrubland**

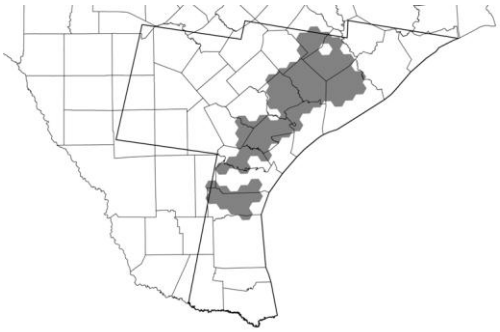
Area in Phase 3: 2,134 acres (864 ha)

Description of Mapped Type: Gulf cordgrass with sparse cover of small trees and shrubs such as sea ox-eye daisy, baccharis, Chinese tallow, mesquite, sumpweed, lotebush, and huisache is characteristic of this type.

**Invasive: Evergreen Shrubland**

Area in Phase 3: 72,929 acres (29,514 ha)

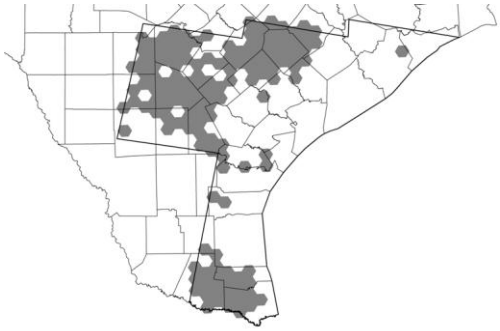
Description of Mapped Type: A variety of mainly disturbance shrublands with species such as huisache, baccharis species, Macartney rose, Chinese tallow (north), yaupon, mesquite, lotebush, colima (south), granjeno (south), and brasil (south) characterize this type. Sparse tree cover with species such as live oak, water oak (north), sugar hackberry, and cedar elm, may also occur.



**Marsh**

Area in Phase 3: 18,521 acres (7,495 ha)

Description of Mapped Type: This type is usually associated with man-made ponds or tanks, and a variety of herbaceous sedges, rushes, spikerushes, bulrushes, smartweeds, and grasses, together with shrubs such as buttonbush and black willow may be important in this mapped type.



**Native Invasive: Baccharis Shrubland**

Area in Phase 3: 54,976 acres (22,248 ha)

Description of Mapped Type: This type is mapped on salty or sandy soils and baccharis, mesquite, salt cedar, and sumpweed are the most common dominants. Other shrubs may include Chinese tallow, sea ox-eye daisy, Macartney rose, swamp privet, and colima, and grasses may include gulf cordgrass, saltgrass, Bermudagrass, and rat-tail smutgrass.

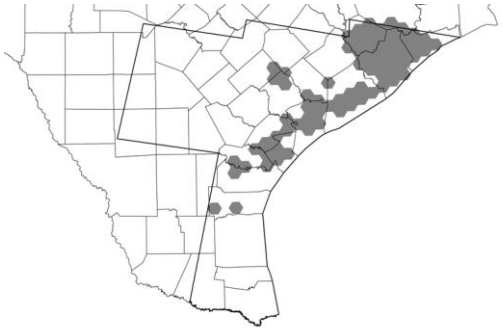
Where to Visit:

Aransas National Wildlife Refuge

Big Boggy National Wildlife Refuge

Brazoria National Wildlife Refuge

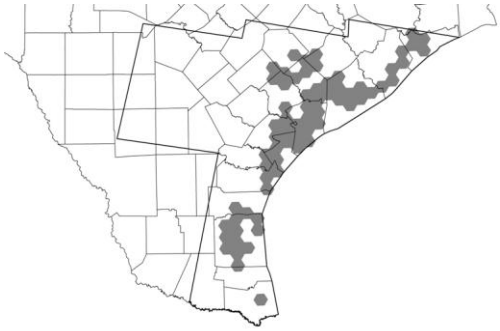
San Bernard National Wildlife Refuge



**Native Invasive: Common Reed**

Area in Phase 3: 31,443 acres (12,725 ha)

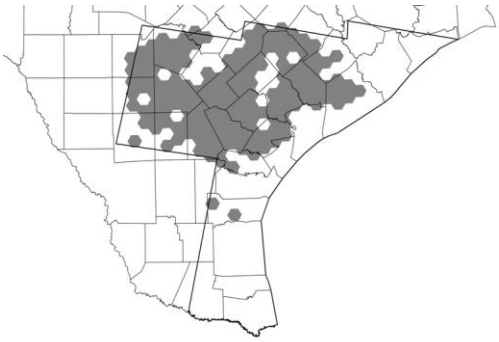
Description of Mapped Type: Areas mapped within this type are often dominated by nearly pure stands of common reed on formerly disturbed soils.



**Native Invasive: Deciduous Woodland**

Area in Phase 3: 366,941 acres (148,496 ha)

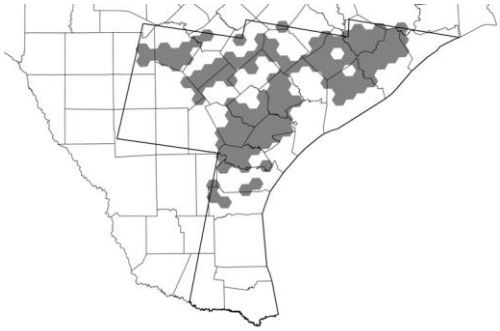
Description of Mapped Type: This broadly-defined type often has mesquite, sugar hackberry, cedar elm, or huisache among the dominants. To the northeast species such as water oak, black willow, and ash may be important, whereas to the west species such as granjeno, colima, and Texas persimmon are more common. Live oak or post oak may also be present.



**Native Invasive: Huisache Woodland or Shrubland**

Area in Phase 3: 151,624 acres (61,360 ha)

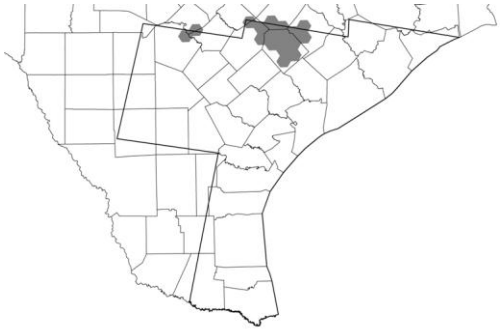
Description of Mapped Type: This broadly-defined type often has invasive shrubs or small trees such as huisache, mesquite, sugar hackberry, cedar elm, or Chinese tallow among the dominants. Live oak may be present in the tree layer, and other common species include granjeno, elbow bush, guajillo, Lindheimer pricklypear, Texas persimmon, and Macartney rose.



**Native Invasive: Juniper Shrubland**

Area in Phase 3: 34,711 acres (14,047 ha)

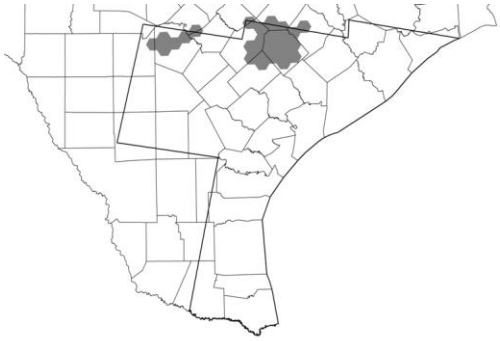
Description of Mapped Type: This type contains both Ashe juniper and eastern redcedar shrublands in Phase 3. The former is limited mainly to the northwestern portion of Phase 3 in the area underlain by Cretaceous limestone of the Edwards Plateau, whereas the latter is mainly in the northeast and east. In both cases, species such as live oak, mesquite, huisache, sugar hackberry, and cedar elm may be components.



**Native Invasive: Juniper Woodland**

Area in Phase 3: 6,128 acres (2,480 ha)

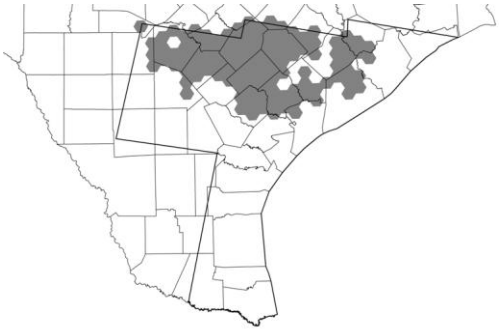
Description of Mapped Type: This type may be dominated either by Ashe juniper in the northwest, over Edwards Plateau limestones, or by eastern redcedar in the northeast and east. Live oak is a common component, and species such as sugar hackberry and cedar elm occur throughout. Post oak and yaupon are commonly associated with eastern redcedar.



**Native Invasive: Mesquite Shrubland**

Area in Phase 3: 439,155 acres (177,720 ha)

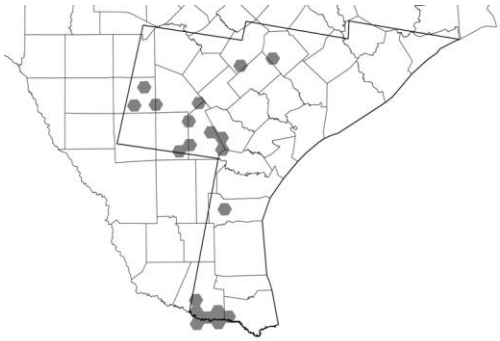
Description of Mapped Type: Mesquite is often the dominant species of this broadly-defined type, but species such as huisache, sugar hackberry, brasil, Texas persimmon, granjeno, and Lindheimer pricklypear may also be important. Trees such as live oak or post oak may form a sparse canopy.



**Native Invasive: Pricklypear**

Area in Phase 3: 599 acres (243 ha)

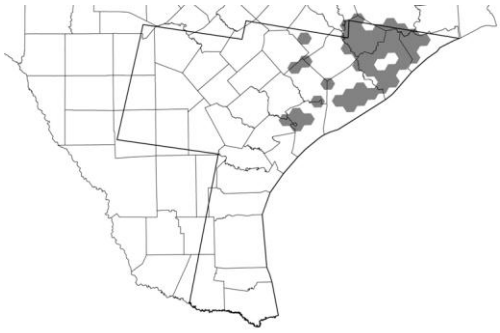
Description of Mapped Type: This type is only mapped on disturbed soils and may contain species such as mesquite, huisache, granjeno, and colima as well as pricklypear among the dominants.



**Non-native Invasive: Chinese Tallow Forest, Woodland, or Shrubland**

Area in Phase 3: 58,729 acres (23,767 ha)

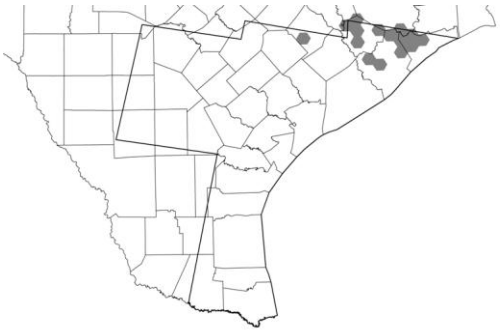
Description of Mapped Type: More or less dense stands of Chinese tallow characterize this type, which is generally mapped over prairie soils, but a diversity of mainly invasive deciduous shrublands and sparse woodlands are circumscribed. Other component species may include mesquite, huisache, baccharis, Macartney rose, cedar elm, water oak, Chinese privet, and yaupon. Sparse tree cover with sugar hackberry, water oak, live oak, and sweetgum may be present.



**Non-native: Invasive: Rose Shrubland**

Area in Phase 3: 5,007 acres (2,026 ha)

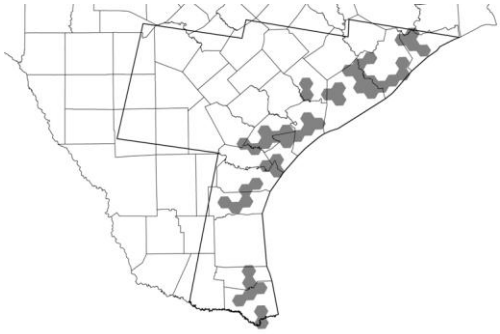
Description of Mapped Type: Macartney rose is the most common dominant of this type, but a variety of mainly invasive shrub types may occur, including species such as huisache, baccharis species, Chinese tallow, sugar hackberry, cedar elm, and yaupon. Sparse tree cover with species such as live oak, water oak, sugar hackberry, and green ash may also occur.



**Non-native Invasive: Salt Cedar Shrubland**

Area in Phase 3: 4,259 acres (1,723 ha)

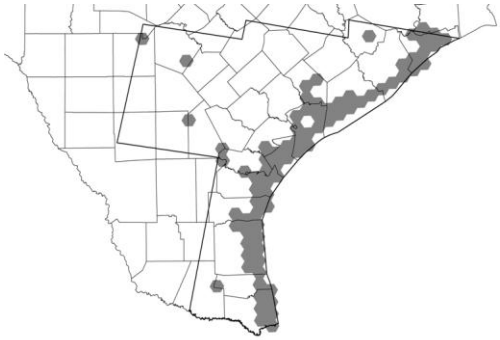
Description of Mapped Type: Mainly invasive shrublands are characteristic of this type and salt cedar is the most common dominant. Species such as sumpweed, baccharis, mesquite, huisache, sugar hackberry, and sea ox-eye daisy may also be present.



**Open Water**

Area in Phase 3: 1,523,502 acres (616,539 ha)

Description of Mapped Type: In addition to large lakes, rivers, and marine waters, ephemeral ponds may be mapped as open water in Phase 3, and some may support vegetation with pioneering species such as black willow, cottonwood, Chinese tallow, seepweed, sea ox-eye daisy, saltwort, rushes, sedges, cattails, and spikerushes.



**Pine Plantation > 3 meters Tall**

Area in Phase 3: 25 acres (10 ha)

Description of Mapped Type: Stands of managed loblolly pine characterize this type, but some areas may contain live oak, eastern redcedar, and yaupon in Phase 3.

**Pine Plantation 1 to 3 meters Tall**

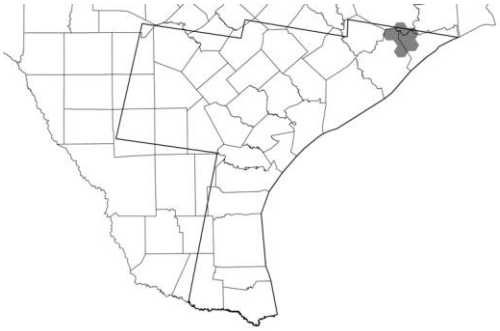
Area in Phase 3: 8,950 acres (3,622 ha)

Description of Mapped Type: Young, planted loblolly pine stands are common within this type, but areas of sparse or short live oak, yaupon, and eastern redcedar may occur in Phase 3.

**Pineywoods: Pine / Hardwood Forest or Plantation**

Area in Phase 3: 2,388 acres (966 ha)

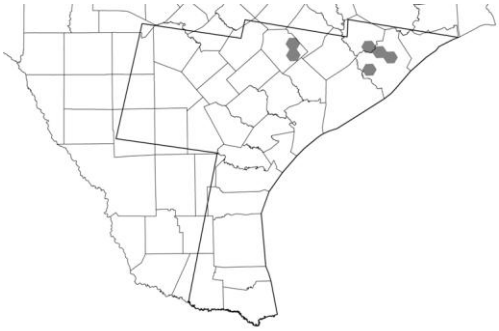
Description of Mapped Type: Managed loblolly pine forests are most common within this mapped type, and hardwoods such as live oak, water oak, and cedar elm are common components. Yaupon and dwarf palmetto are common understory species.



**Pineywoods: Pine Forest or Plantation**

Area in Phase 3: 854 acres (345 ha)

Description of Mapped Type: Managed loblolly pine plantations and forests predominate within this mapped type, and species such as live oak, water oak, eastern redcedar, and yaupon are common components.



**Post Oak Savanna: Live Oak Motte and Woodland**

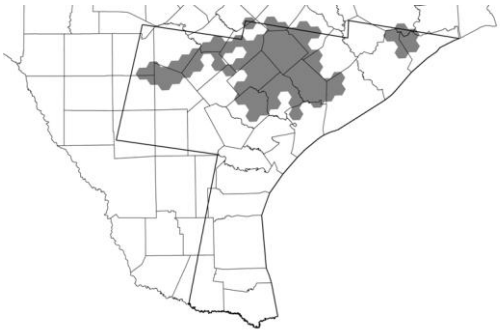
Area in Phase 3: 335,645 acres (135,831 ha)

Description of Mapped Type: Live oak dominates this mainly broadleaf evergreen woodland or forest, and species such as water oak, post oak, and sugar hackberry are common components. Yaupon, American beautyberry, and mesquite are common in the understory. Tamaulipan species such as blackbrush, brasil, and granjeno may occur to the southwest.

Where to Visit:

Armand Bayou County Preserve

Lake Texana



**Post Oak Savanna: Live Oak Shrubland**

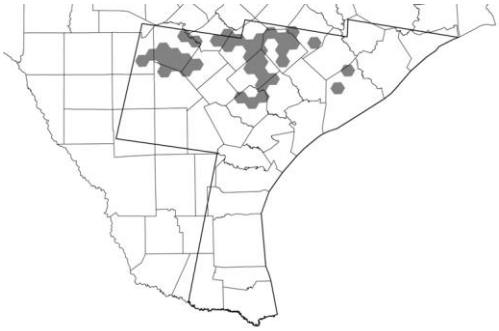
Area in Phase 3: 23,783 acres (9,625 ha)

Description of Mapped Type: This type is mapped mainly in proximity to live oak motte and woodland, and are typically dominated by live oak, but may contain species such as eastern redcedar, sugar hackberry, yaupon, cedar elm, and southern species such as brasil and blackbrush to the south.

**Post Oak Savanna: Live Oak Slope Forest**

Area in Phase 3: 329 acres (133 ha)

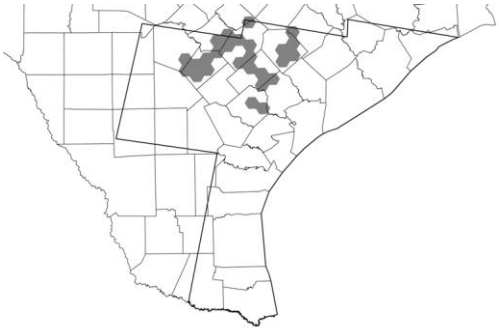
Description of Mapped Type: This type is mapped mainly along river bluffs and contains live oak in nearly pure stands or in combination with species such as post oak, sugar hackberry, ash, cedar elm, Shumard oak, and pecan. Yaupon, American beautyberry, and possumhaw may grow in the shrub layer.



**Post Oak Savanna: Oak / Hardwood Slope Forest**

Area in Phase 3: 768 acres (311 ha)

Description of Mapped Type: This type is mapped mainly on river bluffs and may contain a variety of species among the dominants, including post oak, sugar hackberry, cedar elm, Shumard oak, and ash. Live oak may also be a component. Common understory species may include possumhaw and American beautyberry.



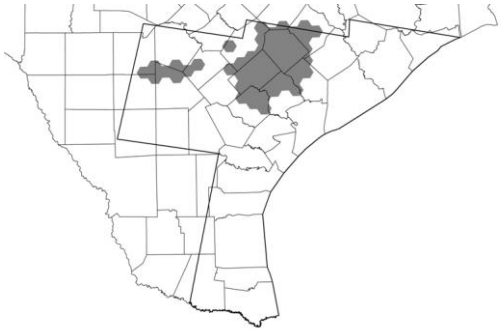
**Post Oak Savanna: Post Oak /Live Oak Motte and Woodland**

Area in Phase 3: 84,859 acres (34,341 ha)

Description of Mapped Type: Post oak and live oak are common overstory species in this type, and sugar hackberry, American elm, water oak, and cedar elm are common in the overstory. Yaupon, huisache, American beautyberry, and mesquite are common shrubs or small trees.

Where to Visit:

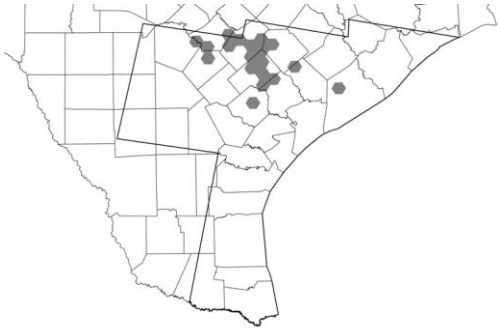
Lake Texana



**Post Oak Savanna: Post Oak /Live Oak Slope Forest**

Area in Phase 3: 45 acres (18 ha)

Description of Mapped Type: Post Oak and other deciduous trees such as sugar hackberry, cedar elm, Shumard oak, and ash share dominance with live oak. Common understory species include yaupon, possumhaw, and American beautyberry.



**Post Oak Savanna: Post Oak / Redcedar Motte and Woodland**

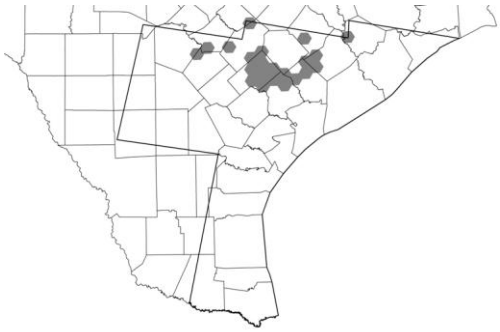
Area in Phase 3: 19,986 acres (8,088 ha)

Description of Mapped Type: Post oak and eastern redcedar are both common in the overstory within this mixed woodland or forest, and live oak and water oak are common components. Some areas may have loblolly pine in the overstory. Blackjack oak, cedar elm, and sugar hackberry are common trees. Yaupon, American beautyberry, and possumhaw are common in the understory.

**Post Oak Savanna: Post Oak / Yaupon Motte and Woodland**

Area in Phase 3: 6,330 acres (2,562 ha)

Description of Mapped Type: Post oak and live oak are common overstory species in this type, and yaupon is the most common understory component. Trees such as water oak and sugar hackberry may be present in the overstory and American beautyberry, gum bumelia, and Texas persimmon are common shrubs. Eastern redcedar is a common component and may be co-dominant in the eastern part of Phase 3.



**Post Oak Savanna: Post Oak Motte and Woodland**

Area in Phase 3: 311,321 acres (125,987 ha)

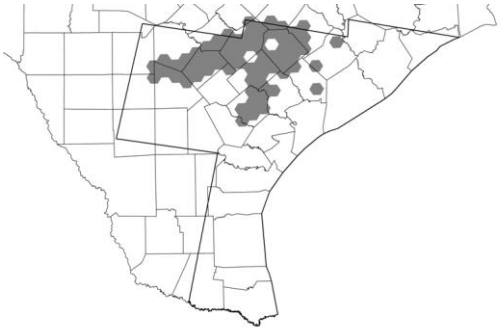
Description of Mapped Type: Post oak is the most frequent dominant tree species and common overstory trees include live oak, black hickory, blackjack oak, sugar hackberry, cedar elm, and water oak. Yaupon, mesquite, gum bumelia, Texas persimmon, and American beautyberry are common shrubs. Tamaulipan shrubs such as blackbrush, brasil, and granjeno may be components in the west.

Where to Visit:

Calaveras Lake Park

Goliad State Park

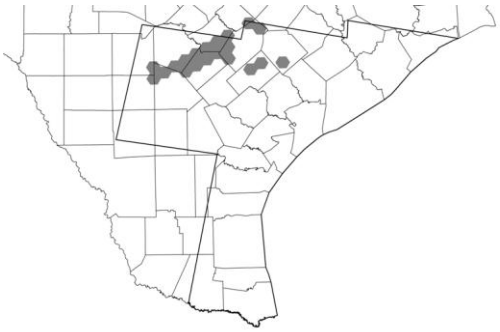
Lake Texana



**Post Oak Savanna: Sandyland Grassland**

Area in Phase 3: 2,145 acres (868 ha)

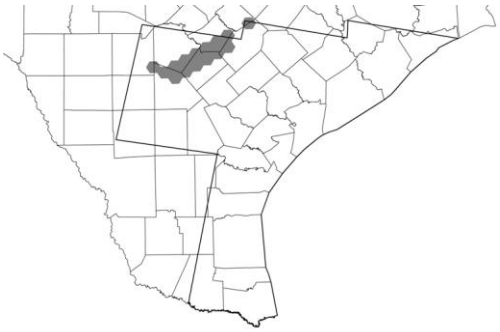
Description of Mapped Type: Little bluestem and brownseed paspalum are common dominants of this type, together with a variety of grasses and forbs common on sands, including curly threeawn, bluntsepal Brazoria, Illinois flatsedge, Florida snake-cotton, purple sandgrass, and pinweed. Post oak and blackjack oak may be present as scattered small trees or shrubs.



**Post Oak Savanna: Sandyland Woodland and Shrubland**

Area in Phase 3: 502 acres (203 ha)

Description of Mapped Type: Post oak, blackjack oak and black hickory are common trees or shrubs, and yaupon may be important. A variety of grasses and forbs may be present, including little bluestem, brownseed paspalum, purple sandgrass, and Florida snake-cotton.



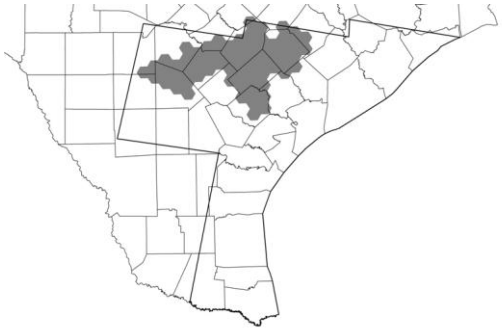
**Post Oak Savanna: Savanna Grassland**

Area in Phase 3: 1,449,693 acres (586,670 ha)

Description of Mapped Type: A variety of grasslands are circumscribed within this type, and disturbance or tame grasses such as Bermudagrass, King Ranch bluestem, and kleingrass are common dominants. Little bluestem, brownseed paspalum, thin paspalum, Indiangrass, lovegrasses, threeawns, and dropseeds are native species that may be important. Western ragweed, and dove weed are common weedy herbaceous species. Mesquite and huisache are common shrub components and live oak and post oak are common as sparse overstory trees.

Where to Visit:

Calaveras Lake Park



**Rio Grande Delta: Deciduous Thorn Woodland and Shrubland**

Area in Phase 3: 323 acres (131 ha)

Description of Mapped Type: This type is mainly deciduous floodplain forest in a variety of successional and disturbance states with species such as sugar hackberry, cedar elm, Mexican ash, huisache granjeno, brasil, pecan, and mesquite as common components. Evergreen species such as anacua and ebony may be present. Other common species include coma, desert olive, western soapberry, colima, and tepeguaje.

Where to Visit:

Las Palomas Wildlife Management Area-Carricitos

Las Palomas Wildlife Management Area-Kelly

Lower Rio Grande Valley National Wildlife Refuge-Gabrielson

Lower Rio Grande Valley National Wildlife Refuge-La Coma

Lower Rio Grande Valley National Wildlife Refuge-La Gloria

Lower Rio Grande Valley National Wildlife Refuge-Lantana

Lower Rio Grande Valley National Wildlife Refuge-Madero

Lower Rio Grande Valley National Wildlife Refuge-Milagro

Lower Rio Grande Valley National Wildlife Refuge-Noriega

Lower Rio Grande Valley National Wildlife Refuge-Ranchito

Lower Rio Grande Valley National Wildlife Refuge-Vela Woods

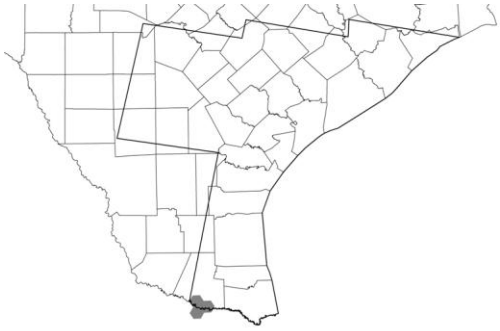
Santa Ana National Wildlife Refuge

World Birding Center – Resaca De La Palma State Park

**Rio Grande Delta: Dense Shrubland**

Area in Phase 3: 40 acres (16 ha)

Description of Mapped Type: A wide diversity of shrubs in different successional stages may be present in this type. Ebony, snake-eyes, mesquite, brasil, lotebush, granjeno, colima, Texas persimmon, guayacan, desert olive, coma, and tepeguaje may be present.



Where to Visit:

Lower Rio Grande Valley National Wildlife Refuge-Gabrielson

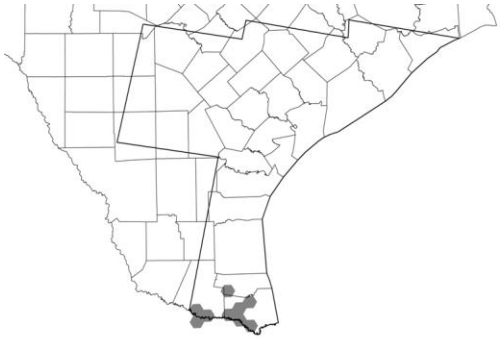
Lower Rio Grande Valley National Wildlife Refuge-Madero

Lower Rio Grande Valley National Wildlife Refuge-Milagro

**Rio Grande Delta: Evergreen Thorn Woodland and Shrubland**

Area in Phase 3: 6,042 acres (2,445 ha)

Description of Mapped Type: This type is dominated by evergreen trees such as ebony and anacua. A wide diversity of shrubs and low trees may occur, including mesquite, sugar hackberry, cedar elm, granjeno, Texas persimmon, tepeguaje, snake-eyes, torchwood, colima, brasil, guayacan, and desert olive.



Where to Visit:

Las Palomas Wildlife Management Area-Arroyo-Colorado

Lower Rio Grande Valley National Wildlife Refuge-Gabrielson

Lower Rio Grande Valley National Wildlife Refuge-La Coma

Lower Rio Grande Valley National Wildlife Refuge-Madero

Lower Rio Grande Valley National Wildlife Refuge-Ranchito

Sabal Palm Grove Sanctuary

Santa Ana National Wildlife Refuge

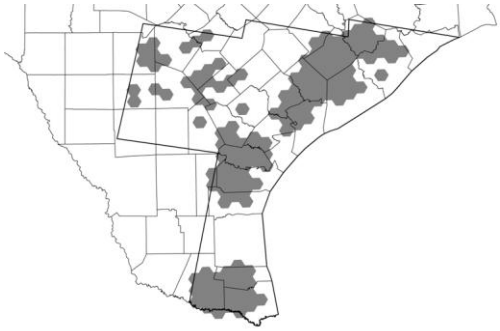
World Birding Center – Resaca De La Palma State Park

World Birding Center – Estero Llano Grande State Park

**Row Crops**

Area in Phase 3: 2,044,718 acres (827,468 ha)

Description of Mapped Type: This type includes all cropland where fields are fallow for some portion of the year. Some fields may rotate into and out of cultivation frequently, and year-round cover crops and tame hay fields are generally mapped as grassland.



**South Texas: Algal Flats**

Area in Phase 3: 44,172 acres (17,876 ha)

Description of Mapped Type: This type consists of areas that are tidally flooded and often covered by bluegreen algae.

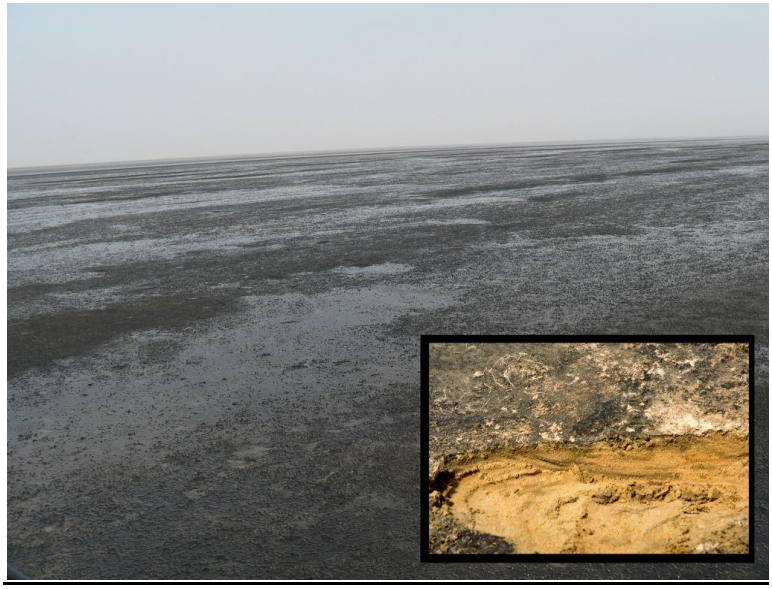
Where to Visit:

Boca Chica State Park

Laguna Atascosa National Wildlife Refuge

Mustang Island State Park

Padre Island National Seashore



**South Texas: Calcareous Dense Shrubland**

Area in Phase 3: 150,620 acres (60,954 ha)

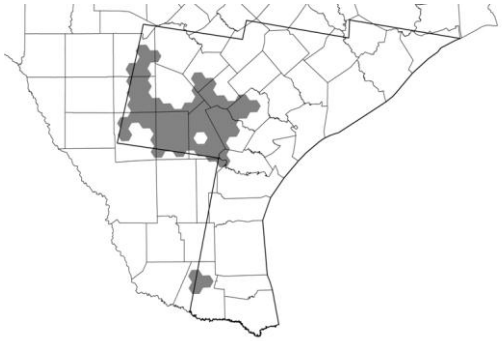
Description of Mapped Type: Species such as cenizo, blackbrush, guajillo, and mesquite form a dense, low canopy. A diversity of shrubs such as shrubby blue sage, Texas kidneywood, Texas persimmon, guayacan, granjeno, coma, brasil, agarito, and vara dulce may be present.

Where to Visit:

Choke Canyon State Park

James E. Daughtrey Wildlife Management Area

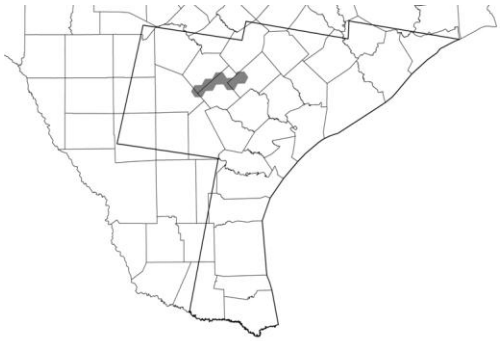
Lake Corpus Christi State Park



**South Texas: Calcareous Live Oak Motte and Woodland**

Area in Phase 3: 84 acres (34 ha)

Description of Mapped Type: Live oak and sugar hackberry together with mainly southern small tree and shrub species such as mesquite, huisache, granjeno, colima, blackbrush, brasil, and Texas persimmon characterize this type.



**South Texas: Calcareous Shrubland**

Area in Phase 3: 170,523 acres (69,008 ha)

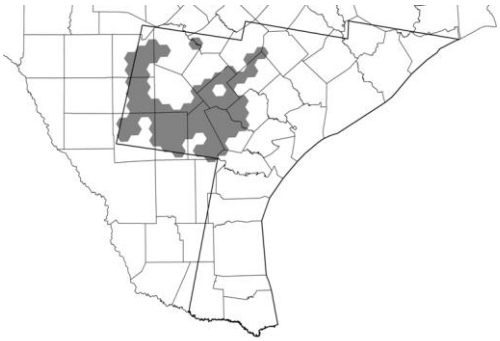
Description of Mapped Type: A discontinuous canopy of shrubs and small trees characterize this type, and species such as mesquite, guajillo, blackbrush, granjeno, cenizo, Texas persimmon, guayacan, and colima are common components.

Where to Visit:

Choke Canyon State Park

James E. Daughtrey Wildlife Management Area

Lake Corpus Christi State Park



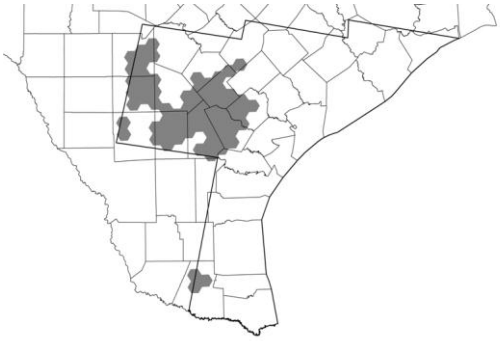
**South Texas: Calcareous Sparse Shrubland**

Area in Phase 3: 181,186 acres (73,323 ha)

Description of Mapped Type: This type includes both grasslands, including managed pastures, and more natural grass/shrub mixes. Common grasses include King Ranch bluestem, buffelgrass, threeawns, buffalograss, Texas grama, and fluff grass, and common shrubs include mesquite, blackbrush, brasil, colima, lotebush, and Texas persimmon.

Where to Visit:

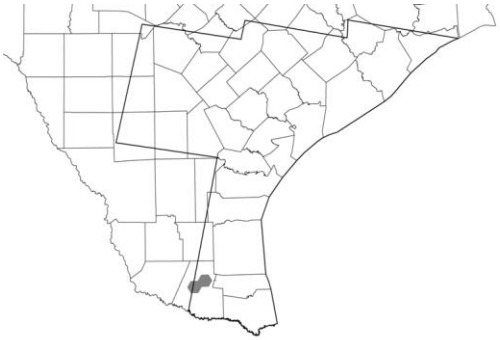
James E. Daughtrey Wildlife Management Area



**South Texas: Caliche Grassland**

Area in Phase 3: 6,767 acres (2,739 ha)

Description of Mapped Type: Shallow, sandy soils over caliche or exposed caliche characterize this type, and grasses such as buffelgrass, King Ranch bluestem, threeawns, and tanglehead are common, along with mesquite, colima, lotebush, and granjeno.

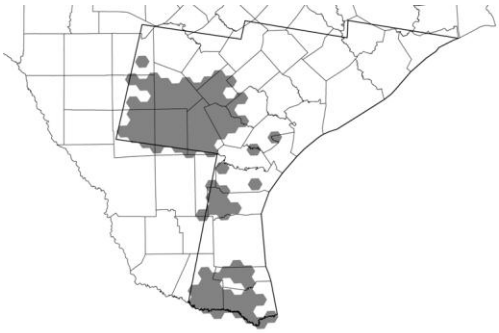


**South Texas: Clayey Blackbrush Mixed Shrubland**

Area in Phase 3: 219,518 acres (88,836 ha)

Description of Mapped Type: Relatively dense shrublands with species such as blackbrush, mesquite, granjeno, guajillo, lotebush, amargosa, brasil, and colima are characteristic of this type.

Where to Visit:



James E. Daughtrey Wildlife Management Area

Laguna Atascosa National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge-Boscaje De La Palma

Lower Rio Grande Valley National Wildlife Refuge-El Jardin

Lower Rio Grande Valley National Wildlife Refuge-La Coma

Lower Rio Grande Valley National Wildlife Refuge-Phillips Banco

Lower Rio Grande Valley National Wildlife Refuge-Resaca Del Rancho Viejo

Lower Rio Grande Valley National Wildlife Refuge-Willamar

Palo Alto Battlefield National Historic Site

Santa Ana National Wildlife Refuge

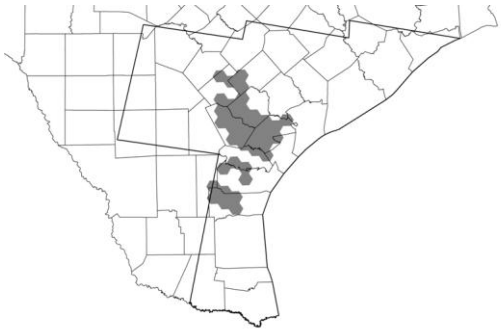
**South Texas: Clayey Live Oak Motte and Woodland**

Area in Phase 3: 20,560 acres (8,320 ha)

Description of Mapped Type: Live oak and sugar hackberry together with mainly southern small tree and shrub species such as huisache, mesquite, granjeno, colima, brasil, and Texas persimmon characterize this type.

Where to Visit:

Welder Wildlife Refuge



**South Texas: Clayey Mesquite Mixed Shrubland**

Area in Phase 3: 583,084 acres (235,966 ha)

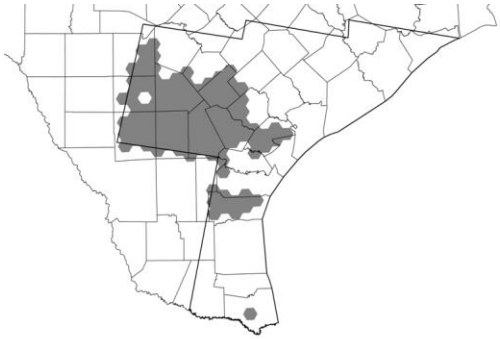
Description of Mapped Type: A discontinuous canopy of shrubs and small trees characterize this type, and species such as mesquite, huisache, granjeno, sugar hackberry, brasil, guajillo, blackbrush, lotebush, pricklypear, and whitebrush are common components. Buffelgrass is a common herbaceous dominant.

Where to Visit:

James E. Daughtrey Wildlife Management Area

Lower Rio Grande Valley National Wildlife Refuge-Teniente

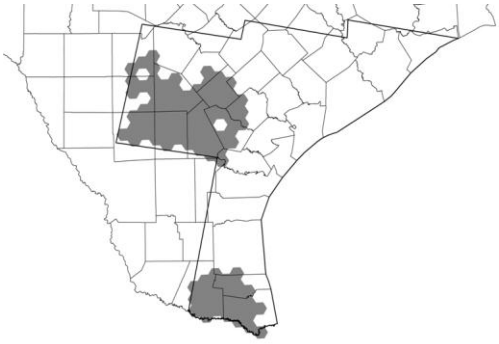
Welder Wildlife Refuge



**South Texas: Disturbance Grassland**

Area in Phase 3: 1,010,157 acres (408,796 ha)

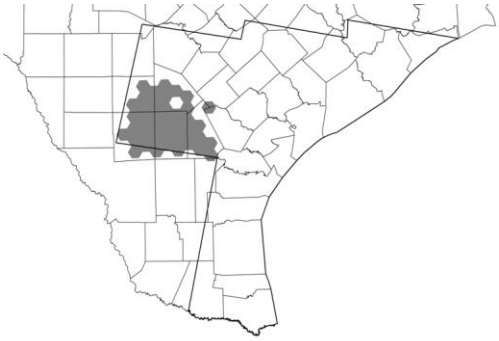
Description of Mapped Type: A variety of mainly heavily grazed grasslands, including managed exotic pastures, are circumscribed within this type. Common dominant species include buffelgrass, King Ranch Bluestem, pink pappusgrass, threeawn species, guineagrass, and Kleberg bluestem. Shrubs and small trees such as mesquite, huisache, lotebush, and granjeno are common components.



**South Texas: Floodplain Deciduous Shrubland**

Area in Phase 3: 100,594 acres (40,709 ha)

Description of Mapped Type: Successional sparse trees and shrubs such as mesquite, sugar hackberry, huisache, Texas persimmon, granjeno, retama, live oak, whitebrush, and brasil are characteristic of this mapped type.

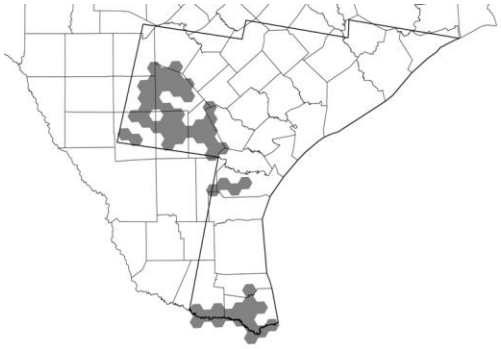


**South Texas: Floodplain Evergreen Forest and Woodland**

Area in Phase 3: 14,831 acres (6,002 ha)

Description of Mapped Type: In the northern part of Phase 3, Live oak together with species such as sugar hackberry, cedar elm, mesquite, huisache, anacua, granjeno, brasil, retama, and colima are common in this type. In the south, Texas ebony and anacua are conspicuous evergreen components of the canopy.

Where to Visit:



James E. Daughtrey Wildlife Management Area

Lower Rio Grande Valley National Wildlife Refuge-Boscaje De La Palma

Lower Rio Grande Valley National Wildlife Refuge-Cottam

Lower Rio Grande Valley National Wildlife Refuge-Resaca Del Rancho Viejo

Lower Rio Grande Valley National Wildlife Refuge-Santa Maria

Lower Rio Grande Valley National Wildlife Refuge-Tulosa Ranch

Santa Ana National Wildlife Refuge

**South Texas: Floodplain Evergreen Shrubland**

Area in Phase 3: 10,745 acres (4,348 ha)

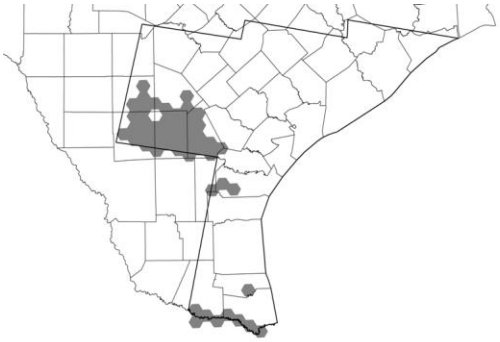
Description of Mapped Type: Trees and shrubs form a relatively dense canopy for this type, and species such as live oak, huisache, mesquite, anacua, Texas ebony, blackbrush, colima, and granjeno may be components.

Where to Visit:

James E. Daughtrey Wildlife Management Area

Lower Rio Grande Valley National Wildlife Refuge-Cottam

Lower Rio Grande Valley National Wildlife Refuge-Hidalgo Bend



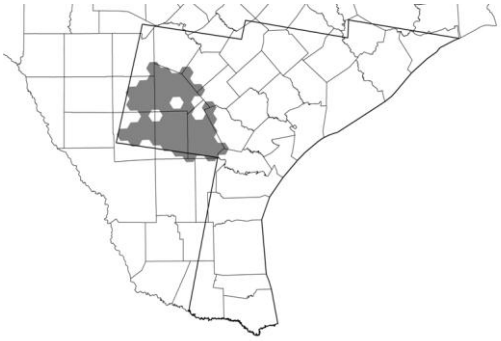
**South Texas: Floodplain Grassland**

Area in Phase 3: 65,259 acres (26,409 ha)

Description of Mapped Type: : A variety of mainly disturbance grasslands, some of them managed exotic pastures, are circumscribed within this type. Common dominant species include buffelgrass, King Ranch Bluestem, guineagrass, Kleberg bluestem, rabbitsfoot grass, and Bermudagrass. Shrubs and small trees such as mesquite, huisache, granjeno, sugar hackberry, whitebrush, lotebush, and colima are common components. Some areas may have slightly salty soils and salt-tolerant species.

Where to Visit:

James E. Daughtrey Wildlife Management Area

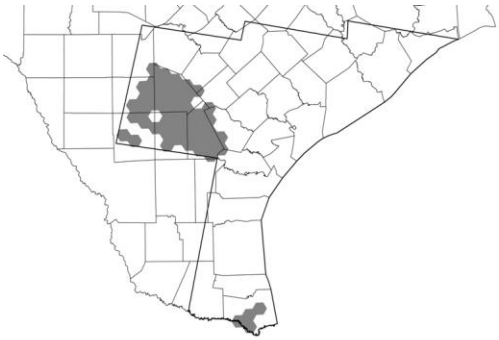


**South Texas: Floodplain Hardwood Forest and Woodland**

Area in Phase 3: 67,198 acres (27,194 ha)

Description of Mapped Type: A variety of trees such as sugar hackberry, live oak, cedar elm, ash, anacua, pecan, black willow, and Chinaberry may be important within this type. Shrubs and small trees such as mesquite, huisache, brasil, granjeno, and colima are common components.

Where to Visit:



Choke Canyon State Park

James E. Daughtrey Wildlife Management Area

Las Palomas Wildlife Management Area-Taormina

Lower Rio Grande Valley National Wildlife Refuge-Cottam

Lower Rio Grande Valley National Wildlife Refuge-Resaca Del Rancho Viejo

Lower Rio Grande Valley National Wildlife Refuge-Santa Maria

Lower Rio Grande Valley National Wildlife Refuge-Villa Nueva

**South Texas: Floodplain Herbaceous Wetland**

Area in Phase 3: 7,655 acres (3,098 ha)

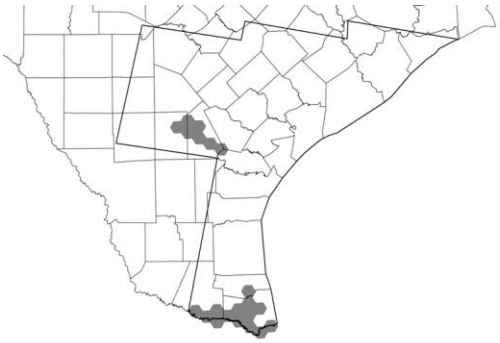
Description of Mapped Type: Wetland species such as cattails, American bulrush, sedges, and spike rushes are common components. Some areas may be salty and contain specie such as sea ox-eye daisy and wolfberry, and shrubs such as black willow and buttonbush may be present.

Where to Visit:

Choke Canyon State Park

James E. Daughtrey Wildlife Management Area

Lower Rio Grande Valley National Wildlife Refuge-Ranchito

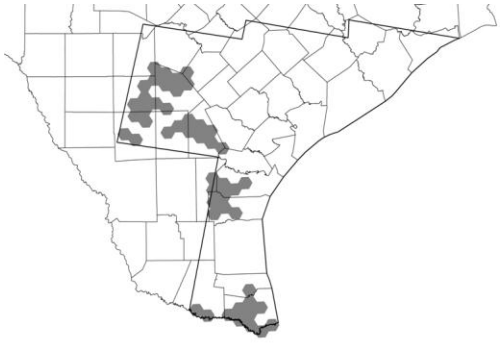


**South Texas: Floodplain Mixed Deciduous / Evergreen Forest and Woodland**

Area in Phase 3: 3,414acres (1,381 ha)

Description of Mapped Type: Live oak, anacua, and Texas ebony are common components of this type, along with a variety of deciduous species such as sugar hackberry, cedar elm, Mexican ash, pecan, black willow, tepeguaje, and Chinaberry. Shrubs and small trees such as mesquite, huisache, whitebrush, brasil, granjeno, and colima are common components.

Where to Visit:



James E. Daughtrey Wildlife Management Area

Lower Rio Grande Valley National Wildlife Refuge-Resaca Del Rancho Viejo

Lower Rio Grande Valley National Wildlife Refuge-Tulosa Ranch

**South Texas: Loma Deciduous Shrubland**

Area in Phase 3: 1,331 acres (539 ha)

Description of Mapped Type: These mainly low, relatively open shrublands occur over both slightly saline and non-saline soils. A diversity of shrubs may be important, including species such as mesquite, Spanish dagger, screwbean mesquite, Lindheimer pricklypear, Berlandier's fiddlewood, gutta-percha, colima, brasil, and huisachillo. Important herbaceous species may include shoregrass, gulf cordgrass, big sacaton, saltwort, buffelgrass, and seepweed.

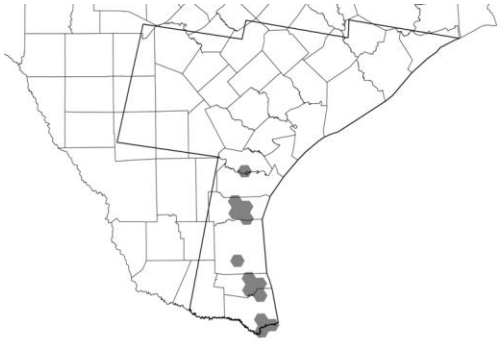
Where to Visit:

Laguna Atascosa National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge-Boca Chica

Lower Rio Grande Valley National Wildlife Refuge-Tulosa Ranch

Lower Rio Grande Valley National Wildlife Refuge-Vista del Mar



**South Texas: Loma Evergreen Shrubland**

Area in Phase 3: 14,487 acres (5,863 ha)

Description of Mapped Type: These mainly low, relatively dense shrublands occur over both slightly saline and non-saline soils. A diversity of shrubs may be important, including species such as mesquite, Spanish dagger, blackbrush, screwbean mesquite, Lindheimer pricklypear, Berlandier's fiddlewood, Texas ebony, gutta-percha, colima, brasil, and huisachillo. Grasses such as big sacaton, buffelgrass, and gulf cordgrass may be present.

Where to Visit:

Laguna Atascosa National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge-Boca Chica

Lower Rio Grande Valley National Wildlife Refuge-Loma Preserve

Lower Rio Grande Valley National Wildlife Refuge-Tulosa Ranch

Lower Rio Grande Valley National Wildlife Refuge-Vista del Mar

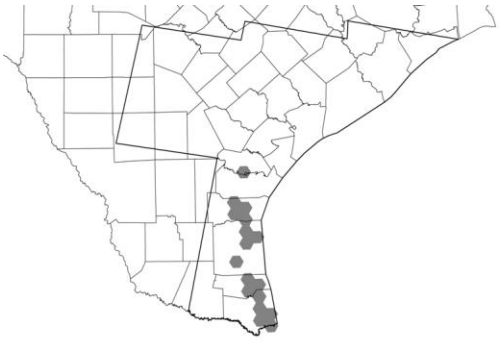
Palo Alto Battlefield National Historic Site

**South Texas: Loma Grassland**

Area in Phase 3: 5,106 acres (2,066 ha)

Description of Mapped Type: These grasslands occur over both slightly saline and non-saline soils. Important herbaceous species may include shoregrass, gulf cordgrass, big sacaton, saltwort, buffelgrass, and seepweed. Shrubs such as mesquite, Spanish dagger, screwbean mesquite, Lindheimer pricklypear, Berlandier's fiddlewood, gutta-percha, colima, brasil, and huisachillo may also be components.

Where to Visit:



Laguna Atascosa National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge-Boca Chica

Lower Rio Grande Valley National Wildlife Refuge-Loma Preserve

**South Texas: Palm Grove**

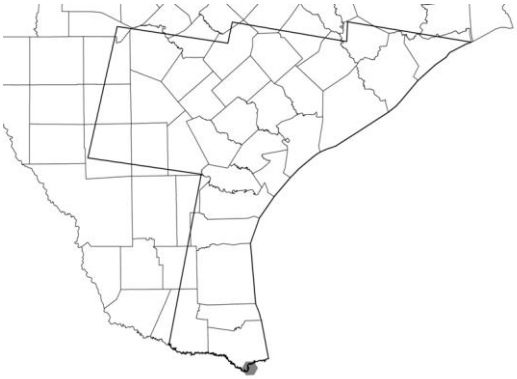
Area in Phase 3: 163 acres (66 ha)

Description of Mapped Type: This type is restricted to fewer than five sites along the Rio Grande in far South Texas. Mexican sabal palm is a conspicuous component, and species such as sugar hackberry, Texas ebony, anacua, Mexican ash, cedar elm, and tepeguaje are common components. Shrubs such as brasil, colima, granjeno, and Texas persimmon are common.

Where to Visit:

Lennox Foundation Southmost Preserve

Sabal Palm Grove Sanctuary



**South Texas: Ramadero Dense Shrubland**

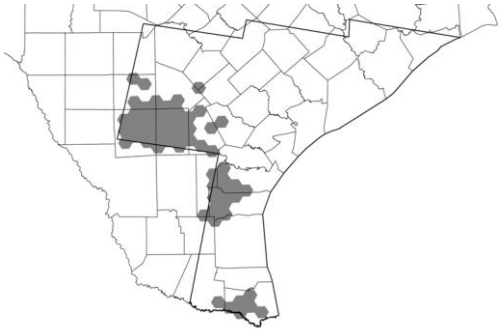
Area in Phase 3: 2,877 acres (1,164 ha)

Description of Mapped Type: This type is mapped as narrow bands along upland drainages. Common small trees or shrubs include mesquite, huisache, granjeno, sugar hackberry, palo verde, whitebrush, colima, brasil, desert olive, and lotebush.

Where to Visit:

Laguna Atascosa National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge



**South Texas: Ramadero Evergreen Woodland**

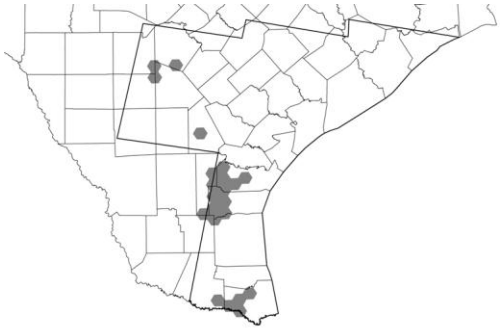
Area in Phase 3: 1,574 acres (637 ha)

Description of Mapped Type: This type is mapped as narrow bands long upland drainages. Common small trees include huisache, sugar hackberry, mesquite, palo verde, live oak, and Texas ebony. Common shrubs include whitebrush, colima, brasil, desert olive, and lotebush.

Where to Visit:

Lower Rio Grande Valley National Wildlife Refuge-Noriega

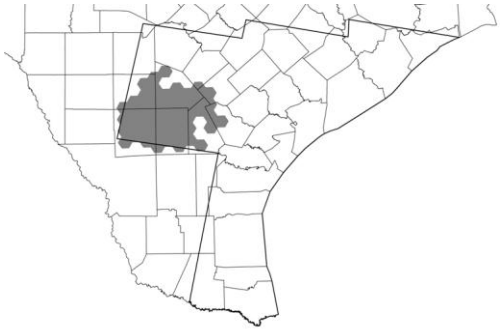
Lower Rio Grande Valley National Wildlife Refuge-Resaca Del Rancho Viejo



**South Texas: Ramadero Shrubland**

Area in Phase 3: 41,685 acres (16,869 ha)

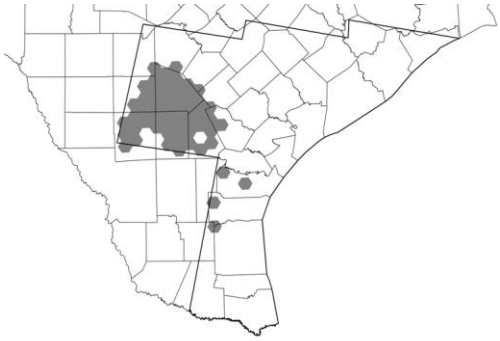
Description of Mapped Type: This type is mapped in narrow bands along upland drainages, and common shrubs or small trees include mesquite, huisache, blackbrush, granjeno, colima, brasil, palo verde, and lotebush.



**South Texas: Ramadero Woodland**

Area in Phase 3: 17,625 acres (7,133 ha)

Description of Mapped Type: This type is mapped as narrow bands long upland drainages. Common small trees include huisache, sugar hackberry, mesquite, and palo verde. Common shrubs include whitebrush, colima, brasil, desert olive, and lotebush.



**South Texas: Saline Lake Flats**

Area in Phase 3: 5,447 acres (2,204 ha)

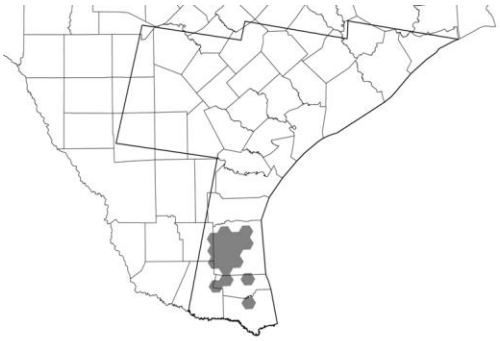
Description of Mapped Type: This type is mainly barren with sparse cover of salt tolerant plants such as saltwort, seepweed, saltgrass, and shoregrass. Vegetation varies from year to year based on precipitation.

Where to Visit:

Lower Rio Grande Valley National Wildlife Refuge-East Lake

Lower Rio Grande Valley National Wildlife Refuge-Payne

Lower Rio Grande Valley National Wildlife Refuge-Teniente



**South Texas: Saline Lake Grassland**

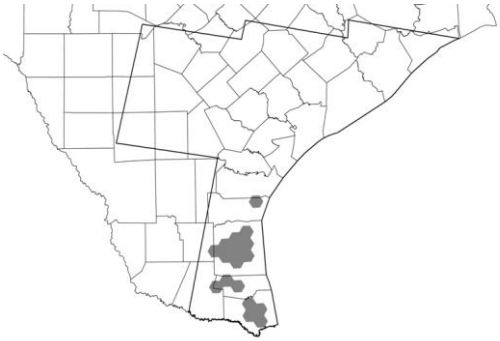
Area in Phase 3: 8,101 acres (3,278 ha)

Description of Mapped Type: This type is dominated by herbaceous species and low shrubs such as saltgrass, shoregrass, sea ox-eye daisy, seepweed, wolfberry, big sacaton, alkali sacaton, and glasswort. Vegetation varies from year to year based on precipitation.

Where to Visit:

Laguna Atascosa National Wildlife Refuge

Palo Alto Battlefield National Historic Site



**South Texas: Salty Thornscrub**

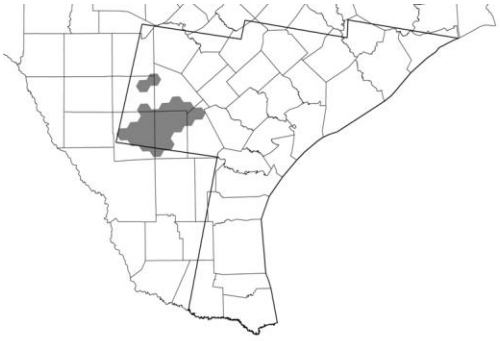
Area in Phase 3: 149,173 acres (60,368 ha)

Description of Mapped Type: This type may be over more or less salty soils, and often contains mesquite at the overstory dominant. A variety of shrubs such as whitebrush, blackbrush, granjeno, lotebush, brasil, goldenweed, Lindheimer pricklypear, four-wing saltbush, amargosa, saladillo, and knifeleaf condalia. Buffelgrass, Kleberg bluestem, common curlymesquite, and whorled dropseed are common grasses.

Where to Visit:

Choke Canyon State Park

James E. Daughtrey Wildlife Management Area



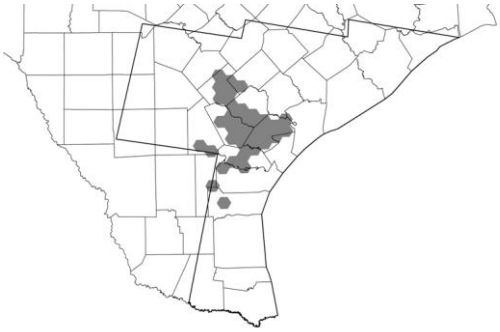
**South Texas: Sandy Live Oak Motte and Woodland**

Area in Phase 3: 38,318 acres (15,507 ha)

Description of Mapped Type: Live oak, sugar hackberry, post oak, and cedar elm are common trees of this type, and shrubs may include a mix of more northern and more southern species such as yaupon, gum bumelia, huisache, mesquite, granjeno, and colima.

Where to Visit:

Welder Wildlife Refuge



**South Texas: Sandy Mesquite / Evergreen Woodland**

Area in Phase 3: 10,812 acres (4,376 ha)

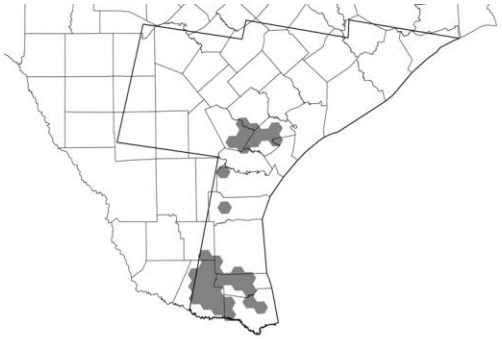
Description of Mapped Type: Mesquite and huisache are common dominants of this type. It is represented by more northern occurrences with species such as live oak, yaupon, and bumelia and more southern occurrences where species such as granjeno, colima, brasil, lotebush, and coma and more common.

Where to Visit:

Laguna Atascosa National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge-La Sal Del Rey

Lower Rio Grande Valley National Wildlife Refuge-Teniente

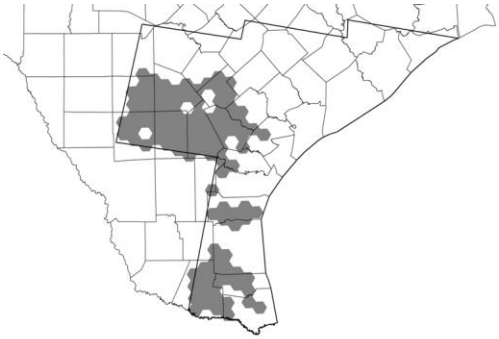


**South Texas: Sandy Mesquite Dense Shrubland**

Area in Phase 3: 232,444 acres (94,067 ha)

Description of Mapped Type: Dense mesquite shrubland with a relatively diverse compliment of additional shrubs and small trees such as colima, granjeno, Texas persimmon, sugar hackberry, Texas ebony, huisache, guajillo, blackbrush, and brasil characterize this type.

Where to Visit:



James E. Daughtrey Wildlife Management Area

Laguna Atascosa National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge-La Sal Del Rey

Lower Rio Grande Valley National Wildlife Refuge-Payne

Lower Rio Grande Valley National Wildlife Refuge-Schaleben

Lower Rio Grande Valley National Wildlife Refuge-Teniente

Padre Island National Seashore

**South Texas: Sandy Mesquite Savanna Grassland**

Area in Phase 3: 695,924 acres (281,630 ha)

Description of Mapped Type: Grasslands with scattered mesquite characterize this type, which includes areas over both loamy sands and loams. Herbaceous species such as King Ranch bluestem, buffelgrass, Kleberg bluestem, Bermudagrass, little bluestem, purple threeawn, silver bluestem, tanglehead, and hog croton are common. Additional common shrubs include Lindheimer pricklypear, huisache, colima, and granjeno.

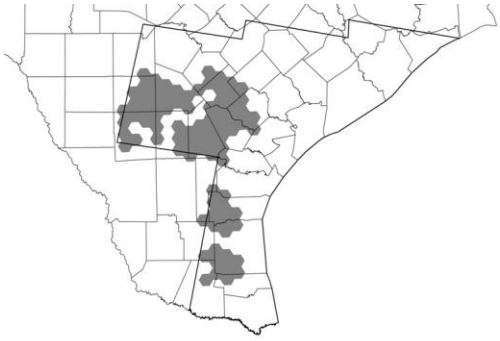
Where to Visit:

Choke Canyon State Park

James E. Daughtrey Wildlife Management Area

Lower Rio Grande Valley National Wildlife Refuge-La Sal Del Rey

Lower Rio Grande Valley National Wildlife Refuge-Teniente

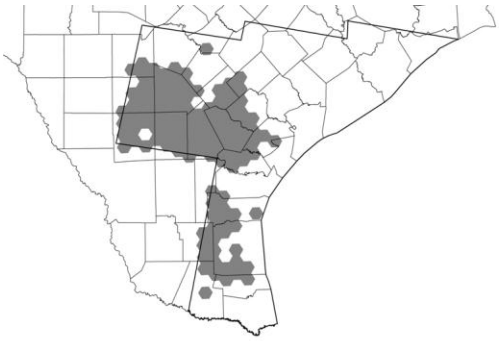


**South Texas: Sandy Mesquite Woodland and Shrubland**

Area in Phase 3: 695,924 acres (281,630 ha)

Description of Mapped Type: Relatively dense mesquite low woodlands are characteristic of this type. Lindheimer pricklypear, granjeno, colima, huisache, sugar hackberry., lotebush, and brasil may be components.

Where to Visit:



Choke Canyon State Park

James E. Daughtrey Wildlife Management Area

Laguna Atascosa National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge-La Sal Del Rey

Lower Rio Grande Valley National Wildlife Refuge-Teniente

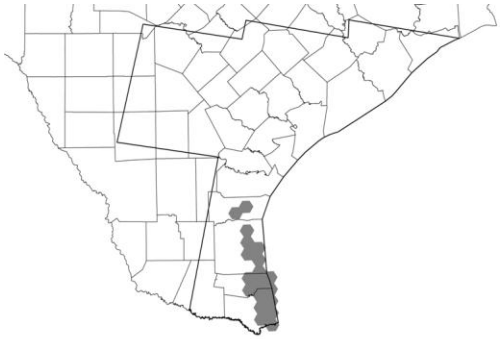
Welder Wildlife Refuge

**South Texas: Wind Tidal Flats**

Area in Phase 3: 205,904 acres (83,327 ha)

Description of Mapped Type: Areas that are frequently flooded and largely barren due to tidal influence characterize this type.

Where to Visit:



Boca Chica State Park

Laguna Atascosa National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge-Boca Chica

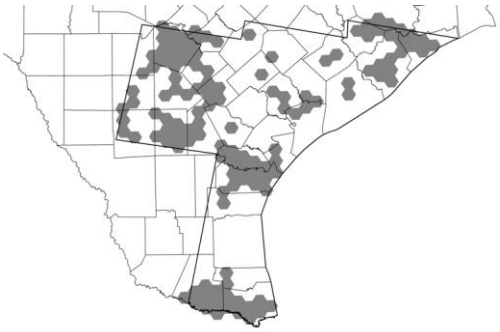
Lower Rio Grande Valley National Wildlife Refuge-Loma Preserve

Padre Island National Seashore

**Urban High Intensity**

Area in Phase 3: 164,631 acres (66,624 ha)

Description of Mapped Type: This type consists of built-up areas and wide transportation corridors that are dominated by impervious cover.



**Urban Low Intensity**

Area in Phase 3: 741,409 acres (300,038 ha)

Description of Mapped Type: This type includes areas that are built-up but not entirely covered by impervious cover, and includes most of the non-industrial areas within cities and towns.